BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2 Note remarks Test sheet Edition : KHD : 14.02.92 Phasing : 0-90-180-270 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 0 400 464 125 Time to cyl. no. : -1Injection pump BASIC SETTING Pump designation : PES4A80D410/3RS1300 EP type number : 0 410 484 015 1st speed rpm: 1150 Governor Covernor design. : R5v325...1150A8C494 Rack travel in mm : 10.50...10.60 -41 Göverner no. : 0 420 232 572 Del.quantity cm3/: 5.0...5.1 Customer—spec. information 100 s: (4.8...5.2) Customer : KHD cm3 : 0.2Spread Engine : F4L912 100 s: (0.3) : 51.0 1st version kW 2nd speed rpm : 325.0 Rack travel in mm : 8.5...8.7 : 2300 Rated speed TEST BENCH REQUIREMENTS Del.quantity cm3/ : 0.8...1.4 100 s: (0.6...1.5) Test oil cm3 : 0.2 Spread inlet temp. °C 100 s: (0.3) : 38...42 Overflow valve GUIDE SLEEVE POSITION : 1 417 413 000 Control-lever position Degree: -3 Inlet press., bar: 1.00 rpm : 800 Speed Rack travel in mm : 0.30...1.00 Test nozzle holder : 0 681 343 009 assembly Governor spring pre-tension Click setting x : ? Openina pressure, bar : 172...175 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 014 Speed rpm : 1150 : 50.0...51.0 Del.quantity 1000 : (48.5...52.5) Outside diameter x Wall thickness : 2.00 Spread cm3x Length mm : 6.00X2.00X600 1000 : (3.50) (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values ____ Control lever position degrees: 53...61 BEGINNING OF DELIVERY Test pressure, bar: 25...27 Testing: 1st rack travel in: 9.50 rpm : 1190...1200 Prestroke mm : 1.90...2.00 Speed

2nd rack travel in: 4.00

: (1.85...2.05)

Speed rpm : 1230...1260 4th rack travel in: 1400

Speed rpm : 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 20...28

Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm : 8.1

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 325

Rack travel in mm : 8.00...8.20 Rack travel in mm : 2.00 rpm : 485...545 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 10.50...10.60

2nd speed rpm : 915
Rack travel in m: 10.90...11.10
3rd speed rpm : 500
Rack travel in m: 11.40...11.50

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.50

rpm : 1190...1200 Speed

Remarks:

APPLICATION

Installation 2300

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2 Note remarks Test sheet Edition 31.01.92 Phasing : 0-90-180-270 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 0 400 844 098 BASIC SETTING Injection pump 1st speed rpm: 1400 Pump designation : PES4A95D41ORS2809 EP type number : 0 410 894 993 Rack travel in mm : 9.90...10.00 Governor : RQV300...1400AB1065-Governor design. Del.quantity cm3/: 6.5...6.6 28L Governer no. : 0 420 212 242 100 s: (6.3...6.8) Customer-spec. information Spread cm3 : 0.3Customer : MERCEDES-BENZ 100 s: (0.6) Engine : OM 364 2nd speed rpm : 300.0 Rack travel in mm : 8.4...8.6 1st version kW : 65.0 : 2800 Rated speed Del.quantity cm3/: 0.8...1.2 100 s: (0.5...1.4) TEST BENCH REQUIREMENTS Spread cm3 : 0.3100 s: (0.5) Test oil inlet temp. °C : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 419 992 198 GUIDE SLEEVE TRAVEL rpm : 300 1st speed Inlet press., bar: 1.50 travel mm : 0.80...1.30 500 2nd speed rpm : 2.30...2.80 : 750 Test nozzle holder travel mm assembly : 0 681 343 009 3rd speed rpm travel mm : 4.10...4.30 Opening : 1500 4th speed rom : 8.50...8.60 pressure, bar : 172...175 travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 015 Control-lever position Degree: -1 Outside diameter Speed rpm : 1450 x Wall thickness Rack travel in mm : 15.20...17.80 x Length mm : 6.00x1.50x600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Speed rpm : 1400 per values Del.quantity : 65.0...66.0 1000 : (63.0...68.0) BEGINNING OF DELIVERY : 3.50 Spread cm3Test pressure, bar: 25...27 1000 : (6.00) Prestroke mm : 3.20...3.30 RATED SPEED

(3.15...3.35)

1st version Control lever

position degrees: 111...119

Testing:

1st rack travel in: 8.90

Speed rpm : 1450...1460

2nd rack travel in: 4.00

rpm : 1535...1565 Speed

4th rack travel in: 1670 Speed rpm: 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 73...81

Testing:

Speed rpm : 100 Minimum rack trave: 9.60 rpm : 300

Rack travel in mm : 8.40...8.60

CONSTANT REGULATION

rpm : 550...700 Speed

TORQUE CONTROL

Dimension a mm : 0.80

Torque control curve - 1st version 1st speed rpm : 1400

Rack travel in m: 9.90...10.00

2nd speed rpm : 400

Rack travel in m: 10.70...10.90

3rd speed rpm : 670

Rack travel in m: 10.50...10.70 th speed rpm : 1060

4th speed

Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 400 Speed

Del.quantity cm3/: 48.0...51.0 1000 s: (45.5...53.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.90

rpm : 1450...1460 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

Rack travel in mm : 14.80...15.20

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.00...2.10 : (1.95...2.05) Note remarks Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Test sheet : MAN 9,7 m : 21.02.92 : 11.73 Edition Replaces Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing Combination no. : 0 400 856 080 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PES6A95D421LS2328 EP type number : 0 410 896 968 BASIC SETTING Governor Governor design. : RQ200/1050AB848DR 1st speed rpm : 1050: 0 420 203 084 Governer no. Rack travel in mm : 10.30...10.40 Customer-spec. information Customer : MAN Del.quantity cm3/: 10.5...10.7 Engine : HMXU 036/37/38 100 s: (10.3...10.9) 1st version kW : 141.3 cm3 : 0.3Spread Rated speed : 2100 2nd version kW : 169.3 100 s: (0.6) Rated speed : 2200 2nd speed rpm : 200.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.1...1.5 TEST BENCH REQUIREMENTS Test oil 100 s: (0.8...1.7) inlet temp. °C : 38...42 cm3 : 0.3Spread 100 s: (0.5) Overflow valve : 1 419 992 198 GUIDE SLEEVE POSITION Control-lever position Inlet press., bar: 1.50 Degree: -1 Speed rpm : 600 Test nozzle holder Rack travel in mm: 15.60...16.40 : 0 681 343 009 assembly FULL LOAD DELIV. AT FULL LOAD STOP **Opening** pressure, bar : 172...175 1st version rpm : 1050 Speed Del.quantity : 105.0...107.0 Test lines : 1 680 750 014 1000 : (103.0...109.0) : 3.50 Spread cm3 Outside diameter 1000 : (6.00)x Wall thickness 2nd version Speed rpm : 1100 Del.quantity cm3/ : 125.0...128.0 1000 s: (123.0...130.0) : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Spread cm3 : 3.50Set equal delivery quant. 1000 s: (6.00) per values RATED SPEED BEGINNING OF DELIVERY Test pressure, bar: 25...27 1st version

Setting point:

Speed rpm : 600 Rack travel in mm: 16.0 Testing: 1st rack travel in: 9.30 Speed rpm : 1090...1105 2nd rack travel in: 4.00 rpm : 1140...1170 Speed 2nd version 4th rack travel in: 1225 Speed rpm : 800 Del.quantity cm3/: 124.0...129.0 1000 s: (121.5...131.5) Speed rpmin: 500 Del.quantity cm3/: 0...122.5 Speed rpm : 0.00...1.00 2nd version 1000 s: (0...125.0) Setting point: Speed rpm: 600 Rack travel in mm: 16.0 RACK STOP ADJUSTMENT Testing: 1st rack travel in: 15.80 Speed rpm : 500 Speed rpm : 1110...1130 2nd rack travel in: 11.60 Speed rpm : 1135...1165 3rd rack travel in: 0...10 BREAKAWAY 1st version Speed rpm : 1180 1mm rack travel less than 4th rack travel in: 1240 rpm : 0.00...1.00 full load rack tr: 9.30 Speed Speed rpm : 1090...1105 LOW IDLE 1 Setting point w/out bumper spring 2nd version Speed rpm : 200 1mm rack travel less than Rack travel in mm: 6.0 full load rack tr: ? Speed rpm : ? Testing: Speed rpm : 100 STARTING FUEL DELIVERY Minimum rack trave: 7.50 Speed rpm : 200 Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 350...390 rpm : 100 Speed Rack travel in mm : 14.50...14.90 Speed : 350 rom rpm : 100 Maximum rack trave: 1.00 Rack travel in mm : 18.0...21.0 TORQUE CONTROL LOW IDLE Dimension a mm : 0.20 Torque control curve - 1st version Speed rpm : 200 1st speed rpm : 1050
Rack travel in m: 10.30...10.40
2nd speed rpm : 500
Rack travel in m: 10.60...10.90 Rack travel in mm: 6.00 Remarks: 3rd speed rpm : 800 Set low idle at stop screw. Rack travel in m: 10.40...10.70 Torque control curve - 2nd version 1st speed rpm : -Rack travel in m: -FUEL DELIVERY CHARACTERISTICS 1st version

A06

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet Edition : MWM 4,1 b 5 : 14.02.92 : 02.91 Replaces Test oil : ISO-4113 Combination no. : 0 400 864 084 Injection pump Pump designation : PES4A90D320/3RS2659 EP type number : 0 410 894 028 Governor Governor design. : RSV325...1250A0C2182 -8R : 0 420 233 277 Governer no. Customer-spec. information Customer : MWM Engine : D226B-4 1st version kW : 74.0 : 2500 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2 Phasina : 0-90-180-270 Tolerance + - ° : 0.50 (0.75)BEGINNING OF DELIVERY DIFFERENCE betw. rack trav. m: 9.00...0.00 & maximum rack tra: 21.00 Difference ° CS : 3.50...4.50 BASIC SETTING 1st speed rom: 1175 Rack travel in mm: 10.70...10.80 Del.quantity cm3/: 8.0...8.2 100 s: (7.8...8.4) Spread cm3 : 0.3100 s: (0.5) rpm : 325.0 2nd speed Rack travel in mm: 6.7...6.9 Del.quantity cm3/: 0.8...1.2 100 s: (0.6...1.4) Spread cm3 : 0.2100 s: (0.4) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 3.00FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1175 Aneroid pressure h: 900 Del.quantity : 80.5...oc... 1000 : (78.5...84.5) Soread cm3 : 3.00 1000 : (5.00) RATED SPEED 1st version

Control lever

position degrees: 89...97

A07

Prestroke mm

Test pressure, bar: 25...27

: 2.95...3.05 : (2.90...3.10)

Testing: 1st rack travel in: 9.70 Speed rpm : 1215...1225 2nd rack travel in: 4.00 Speed : 1230...1260 Speed rom 3rd rack travel in: 4.00 : 1240...1270 Speed LIDU 4th rack travel in: 1415 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 62...70 BREAKAWAY Setting point w/out bumper spring rpm Rack travel in mm: 5.5 Testing: Speed : 100 rpm Speed Minimum rack trave: 19.50 : 325 rpm Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed : 455...515 rom Speed TORQUE CONTROL Torque control curve - 1st version t speed rpm : 1175 Rack travel in m: 10.70...10.80 1st speed LOW IDLE nd speed rpm : 500 Rack travel in m: 11.50...11.60 2nd speed Speed rpm : 920 4th speed Rack travel in m: 11.00...11.20 Aneroid/Altitude Compensator Test Remarks: 1st version Setting Speed : 500 rpm Pressure hPa : 900 Rack travel mm : 11.50...11.60 Measurement Speed $1/\min : 500$ 1st pressure hPa : -Rack travel in m: 10.50...10.60 2nd pressure hPa : 215 Rack travel in m: 10.90...11.00 3rd pressure hPa : 180 Rack travel in m: 10.70...10.90 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900

: 800 rpm Del.quantity cm3/: 84.5...86.5 1000 s: (82.0...89.0) Aneroid pressure h: 215 : 500 rpm Del.quantity cm3/: 68.0...70.0 1000 s: (65.5...72.5) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 64.0...65.0 1000 s: (62.0...67.0) 1st version 1mm rack travel less than full load rack tr: 9.70 rpm : 1215...1225 STARTING FUEL DELIVERY : 100 rpm Del.quantity cm3/: 130.0...140.0 1000 s: (127.0...143.0) Rack travel in mm: 19.50...21.00 rpm : 325 Rack travel in mm : 6.70...6.90 Del.quantity cm3/: 8.0...12.0 1000 s: (6.0...14.0) Spread cm3 : 2.50 1000 s: (4.50) : FENDT

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD Edition : 14.02.92 Replaces Test oil : ISO-4113 Combination no. : 0 400 865 019 Injection pump Pump designation : PES5A80D410/3RS2526 EP type number : 0 410 885 004 Governor : RSV325...1150A8C604-Governor design. 1L : 0 420 232 573 Governer no. Customer-spec. information : KHD Customer : F5L912 Engine 1st version kW : 62.0 Rated speed : 2300 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar: 1.00 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test Lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ___ BEGINNING OF DELIVERY

Rack travel in mm : 9.00...12.00 Firing order : 1-3-5-4-2 Phasing : 0-72-144-216-288 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1130 Rack travel in mm : 12.60...12.70 Del.quantity cm3/ : 6.5...6.6 100 s: (6.3...6.7) Spread cm3 : 0.2100 s: (0.4) rpm : 325.0 2nd speed Rack travel in mm: 8.6...8.8 Del.quantity cm3/: 0.9...1.5 100 s: (0.7...1.6) Spread cm3: 0.2 100 s: (0.3) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.78 Governor spring pre-tension Click setting x : 4.50FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1130 Speed : 65.0...66.0 Del.quantity 1000 : (63.5...67.5) : 2.50 Spread cm31000 : (4.00) RATED SPEED 1st version Control lever position degrees: 100...108 Testing: 1st rack travel in: 11.60 Speed rpm : 1170...1180 2nd rack travel in: 4.00 rpm : 1215...1245 Speed 3rd rack travel in: 4.00

Prestroke mm

Test pressure, bar: 25...27

: 1.90...2.00

: (1.85...2.05)

rpm : 1220...1250 Speed 4th rack travel in: 1350 Speed rpm : 0.30...1.40

LOW IDLE 1 Control Lever

position degrees: 65...73
Setting point w/out bumper spring

Speed rpm : 325 Rack travel in mm : 5.5

Testing:

Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm: 325
Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00 Speed rpm : 400...460

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1130

Rack travel in m: 12.60...12.70

2nd speed rpm : 500
Rack travel in m: 13.30...13.40
4th speed rpm : 910
Rack travel in m: 12.90...13.10

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1170...1180

Remarks:

APPLICATION

Installation 2300

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks Test sheet : KHD Edition : 14.02.92 Phasing : 0-60-120-180-240-300 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 0 400 866 093 BASIC SETTING Injection pump 1st speed rpm: 1130 Pump designation: PES6A80D410/3RS2527 EP type number : 0 410 886 059 Rack travel in mm : 12.60...12.70 Governor : RSV325...1150A8C604-Governor design. Del.quantity cm3/ : 6.5...6.6 1L : 0 420 232 573 Governer no. 100 s: (6.3...6.7) Customer-spec. information Spread cm3 : 0.2Customer : KHD 100 s: (0.3) : F6L912 Engine rpm : 325.0 2nd speed 1st version kW : 78.0 Rack travel in mm: 8.9...9.1 Rated speed : 2300 Del.quantity cm3/: 0.9...1.5 100 s: (0.7...1.6) cm3 : 0.2 TEST BENCH REQUIREMENTS Spread 100 s: (0.3) Test oil inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Control-lever position Overflow valve Degree: -3 : 1 417 413 000 Speed rpm : 800 Rack travel in mm : 0.30...1.00 Inlet press., bar: 1.50 Governor spring pre-tension Test nozzle holder Click setting x : ? : 0 681 343 009 assembly FULL LOAD DELIV. AT FULL LOAD STOP **Opening** pressure, bar : 172...175 1st version Speed rpm : 1130 : 65.0...66.0 Del.quantity : (63.5...67.5) Test Lines : 1 680 750 014 1000 : 2.00 Spread cm3 Outside diameter 1000 : (3.50) x Wall thickness x Length mm : 6.00x2.00x600 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Control lever Set equal delivery quant. position degrees: 98...106 per values Testing: BEGINNING OF DELIVERY 1st rack travel in: 11.60 Test pressure, bar: 25...27 rpm : 1170...1180 Speed 2nd rack travel in: 4.00 rpm : 1215...1245 Prestroke mm : 1.90...2.00 Speed : (1.85...2.05) 3rd rack travel in: 4.00

Speed rpm : 1240...1270

4th rack travel in: 1385

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 64...72 Setting point w/out bumper spring

Speed : 325 rpm Rack travel in mm: 8.5 : 325 Speed rpm

Rack travel in mm : 8.90...9.10

Rack travel in mm: 2.00

Speed : 460...520 rom

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1130 1st speed

Rack travel in m: 12.60...12.70

2nd speed rpm : 500

Rack travel in m: 13.30...13.40

: 850 3rd speed rpm

Rack travel in m: 12.90...13.20

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1170...1180

STARTING FUEL DELIVERY

Speed nom : 100

Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm : 19.50...21.00

:

Remarks:

APPLICATION

Installation 2300

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Note remarks Test sheet : KHD Edition : 21.02.92 Phasing : 0-60-120-180-240-300 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 0 400 866 174 BASIC SETTING Injection pump rpm: 1200 1st speed Pump designation : PES6A85D410/3RS2611 EP type number : 0 410 886 902 Rack travel in mm : 10.40...10.50 Governor Governor design. : RSV325...1200ADC2148 Del.quantity cm3/ : 5.8...5.9 -2L : 0 420 232 570 Governer no. 100 s: (5.6...6.1) Customer-spec. information cm3 : 0.3Spread Customer : KHD 100 s: (0.5) Engine : F6L913 2nd speed rpm : 300.0 Rack travel in mm : 8.4...8.6 Del.quantity cm3/ : 0.6...1.2 1st version kW : 81.0 Rated speed : 2400 100 s: (0.4...1.4) TEST BENCH REQUIREMENTS Spread cm3 : 0.2 100 s: (0.4) Test oil inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Control-lever position Overflow valve Degree: -3 rpm : 800 : 1 419 992 198 Speed Rack travel in mm : 0.30...0.70 Inlet press., bar: 1.50 Governor spring pre-tension Test nozzle holder Click setting x : 4.00assembly : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP Openina pressure, bar : 172...175 1st version rpm : 1200 Speed : 58.5...59.5 : (56.5...61.5) Del.quantity Test Lines : 1 680 750 014 1000 Spread cm3 : 3.00 Outside diameter 1000 : (5.00) x Wall thickness : 6.00X2.00X600 x Length mm RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Control Lever Set equal delivery quant. position degrees: 102...110 per values Testing: BEGINNING OF DELIVERY 1st rack travel in: 9.40 rpm : 1235...1245 Yest pressure, bar: 25...27 Speed 2nd rack travel in: 4.00 Speed rpm : 1295...1325 4th rack travel in: 1460 Prestroke mm : 2.50...2.60

: (2.45...2.65)

rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 73...81 Setting point w/out bumper spring rpm Rack travel in mm: 8.5 Testing: Speed rpm Minimum rack trave: 19.50 Speed rpm : 300
Rack travel in mm : 8.40...8.60
Rack travel in mm : 2.00 Speed rpm : 490...520 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 10.40...10.50 nd speed rpm : 500 rpm 2nd speed Rack travel in m: 11.60...11.80 3rd speed rpm : 750 Rack travel in m: 11.60...11.70 4th speed rpm : 975 Rack travel in m: 10.80...11.00 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 750 Del.quantity cm3/: 58.0...60.0 1000 s: (55.5...62.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.40 Speed rpm : 1235...1245 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0) Rack travel in mm: 17.20...17.60 Remarks: APPLICATION

Tractor (tractor engines)

A14

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM Edition : 14.02.92

Replaces

Test oil : ISO-4113

Combination no. : 0 400 866 175

Injection pump

Pump designation : PES6A90D320/3RS2660

EP type number : 0 410 896 078

Governor

Governor design. : RSV325...1175A0C2247

-2R

: 0 420 233 290 Governer no.

Customer-spec. information Customer : MUM

Engine : TD226-B6

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm : (2.90...3.10)
Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : -1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm: 1175

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 8.3...8.4

100 s: (8.1...8.6)

cm3 : 0.3Spread

100 s: (0.5)

rpm 3 350.0 2nd speed

Rack travel in mm: 6.7...6.9

Del.quantity cm3/: 1.0...1.6

100 s: (0.8...1.8)

cm3 : 0.2Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175 Aneroid pressure h: 700

: 83.0...84.0 Del.quantity

1000 : (81.0...86.0)

: 3.00 Spread cm3

1000 : (5.00)

RATED SPEED

1st version Control lever

position degrees: 93...101

Testina: 1st rack travel in: 10.10 Speed rpm : 1215...1225 2nd rack travel in: 4.00 : 1270...1300 Speed rpm 3rd rack travel in: 4.00 rpm : 1285...1315 Speed 4th rack travel in: 1430 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 64...72 Setting point w/out bumper spring : 350 rpm Rack travel in mm: 6.3 Testing: Speed : 100 rom Minimum rack trave: 19.50 : 350 Speed rpm Rack travel in mm : 6.70...6.90 Rack travel in mm : 2.00 : 530...590 Speed rom TORQUE CONTROL Torque control curve - 1st version et speed rpm: 1175
Rack travel in m: 11.10...11.20 1st speed 2nd speed : 500 rpm Rack travel in m: 11.60...11.80 3rd speed rpm : 800 Rack travel in m: 11.60...11.80 4th speed rpm : 985 Rack travel in m: 11.20...11.40 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 700 Pressure Rack travel mm : 11.60...11.80 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.80...10.90 2nd pressure hPa : 300 Rack travel in m: 11.40...11.50 3rd pressure hPa : 250 Rack travel in m: 11.10...11.30 FUEL DELIVERY CHARACTERISTICS 1st version

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10 Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Remarks:

: RENAULT

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MuM Edition : 14.02.92

Replaces

Test oil : ISO-4113

Combination no. : 0 400 866 176

Injection pump

Pump designation : PES6A90D320/3RS2660

EP type number : 0 410 896 078

Governor

Governor design. : RSV325...1175A0c2249

-1R

Governer no. : 0 420 233 291

Customer-spec. information Customer : MWM

Engine : TD226-B6

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05 : (2.90...3.10)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : -1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 3.50...4.50

BASIC SETTING

rpm: 1175 1st speed

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 9.8...9.9

100 s: (9.6...10.1)

Spread cm3 : 0.3

100 s: (0.5)

rpm : 350.02nd speed

Rack travel in mm: 6.7...6.9 Del.quantity cm3/: 1.0...1.6

100 s: (0.8...1.8)

cm3 : 0.2Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175 Aneroid pressure h: 700

: 98.0...99.0 Del.quantity

1000 : (96.0...101.0) cm3 : 3.00

Spread 1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 93...101

Testing: 1st rack travel in: 11.20 Speed rpm : 1215...1225 2nd rack travel in: 4.00 rpm : 1245...1275 Speed 3rd rack travel in: 4.00 rpm : 1275...1305 Speed 4th rack travel in: 1400 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 67...75 Setting point wout bumper spring rpm : 350 Rack travel in mm: 6.3 Testing: Speed rpm: 100 Minimum rack trave: 19.50 rpm : 350 Speed Rack travel in mm : 6.70...6.90 Rack travel in mm : 2.00 Speed rom : 480...540 TORQUE CONTROL Torque control curve - 1st version t speed rpm : 1175
Rack travel in m: 12.20...12.30 1st speed 2nd speed rpm : 500 Rack travel in m: 12.20...12.40 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : 700 Pressure Rack travel mm : 12.20...12.30 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.80...10.90 2nd pressure hPa : 365 Rack travel in m: 11.80...11.90 3rd pressure hPa : 275 Rack travel in m: 11.30...11.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm: 500 Del.quantity cm3/: 89.0...91.0 1000 s: (86.5...93.5)

Aneroid pressure h: Speed rpm: 500
Del.quantity cm3/: 66.5...67.5
1000 s: (64.5...69.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.20 Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...140.0 1000 s: (127.0...143.0)

Rack travel in mm : 19.50...21.00

Remarks:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet

: LIE 5,6 a15 : 21.02.92 Edition Replaces : 10.91

Test oil : ISO-4113

Combination no. : 0 400 874 238R

Injection pump

Pump designation : PES4A95D410RS2685 : 0 410 894 996

EP type number

Governor

Governor design. : RSV400...1000A1c2187

Governer no.

: 0 420 232 387

Customer-spec. information Customer : LIEBHERR

: D904 T Engine

1st version kW : 90.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.70...2.80 Prestroke mm

: (2.65...2.85)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00

Difference ° CS : 4.00...5.00

BASIC SETTING

rpm: 975 1st speed

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 11.4...11.6

100 s: (11.2...11.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 415.0

Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975

: 114.0...116.0 Del.quantity

1000 : (112.0...118.0)

: 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Testina: 1st rack travel in: 11.20 rpm : 1015...1025 Speed 2nd rack travel in: 4.00 Speed rpm : 1030...1060 3rd rack travel in: 4.00 Speed rpm : 1070...1090 4th rack travel in: 1230 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 65...73 Setting point w/out bumper spring Speed rpm : 415 Rack travel in mm : 6.2 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 415 Rack travel in mm: 6.60...6.80 Rack travel in mm: 2.00 rpm : 535...595 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 975 Rack travel in m: 12.20...12.30 2nd speed rpm : 500 Rack travel in m: 12.70...12.90 3rd speed rpm : 800 Rack travel in m: 12.70...12.90 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/: 111.5...114.5 1000 s: (109.0...117.0) Speed rpm : 800 Del.quantity cm3/: 123.0...126.0 1000 s: (120.5...128.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.20 rpm : 1015...1025 Speed STARTING FUEL DELIVERY

Rack travel in mm : 19.50...21.00 LOW IDLE Speed rpm : 415 Rack travel in mm : 6.60...6.80 Del.quantity cm3/: 17.0...21.0 1000 s: (14.5...23.5) cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

Speed rpm : 100 Del.quantity cm3/ : 120.0...130.0 1000 s: (117.0...133.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 7.50...10.50 : 1-5-3-6-2-4 Firing order Note remarks : DAF 6,2 o 8 : 22.01.92 Test sheet Edition : 0-60-120-180-240-300 Phasing Replaces : 12.91 Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 0 400 876 379 Time to cyl. no. : 1 Injection pump BEGINNING OF DELIVERY DIFFERENCE Pump designation : PES6A95D32ORS2693 : 0 410 896 914 EP type number betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 2.50...3.50 Governor : RSV300...1300A0c2248 Governor design. -3R : 0 420 233 275 Governer no. BASIC SETTING Customer-spec. information 1st speed rpm: 850 Customer : DAF Rack travel in mm : 11.40...11.50 Engine : NT 133 Del.quantity cm3/: 7.6...7.7 1st version kW : 133.0 Rated speed : 2600 100 s: (7.4...7.9) TEST BENCH REQUIREMENTS Spread cm3 : 0.3Test oil 100 s: (0.6) inlet temp. °C : 38...42 rpm : 300.0 2nd speed Overflow valve Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 0.6...1.0 : 1 419 992 198 100 s: (0.3...1.2) cm3 : 0.3Inlet press., bar: 1.50 Spread 100 s: (0.5) Test nozzle holder : 0 681 343 009 assembly GUIDE SLEEVE POSITION Control-lever position Opening. Degree: -3 pressure, bar : 172...175 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Test lines : 1 680 750 015 Governor spring pre-tension Click setting x : 5.50Outside diameter x Wall thickness FULL LOAD DELIV. AT FULL LOAD STOP x Length mm : 6.00X1.50X600 1st version (A) Injection pump setting values Speed rpm : 850 Insp. values in parentheses Aneroid pressure h: 700 Set equal delivery quant. : 76.5...77.5 Del.quantity 1000 : (74.5...79.5) per values : 3.50 Spread cm3 1000 : (6.00) BEGINNING OF DELIVERY Test pressure, bar: 25...27 RATED SPEED

1st version

Prestroke mm

: 2.00...2.10 : (1.95...2.15)

Control lever Speed position degrees: 104...112 Testing: 1st rack travel in: 9.50 Speed rpm : 1340...1350 BREAKAWAY 2nd rack travel in: 4.00 rpm : 1390...1420 Speed 1st version 3rd rack travel in: 4.00 Speed rpm : 1410...1440 4th rack travel in: 1570 Speed rpm : 0.30...1.40 Speed LOW IDLE 1 LOW IDLE Control Lever position degrees: 72...80 Speed Setting point w/out bumper spring : 300 rom Rack travel in mm: 5.9 Speed rpm : 300 Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 Speed rpm : 560...620 Remarks: TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1290 Rack travel in m: 10.50...10.60 2nd speed rpm : 500 Rack travel in m: 11.80...11.90 4th speed rpm : 1070 Rack travel in m: 11.10...11.30 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed man hPa : 700 Pressure Rack travel mm : 11.40...11.50 Measurement Speed 1/min: 600 1st pressure hPa : -Rack travel in m: 10.10...10.30 2nd pressure hPa : 160 Rack travel in m: 10.70...10.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm : 1290 Del.quantity cm3/ : 73.0...75.0 1000 s: (70.5...77.5) Aneroid pressure h: -

rpm : 600 Del.quantity cm3/: 50.5...51.5 1000 s: (48.5...53.5) 1mm rack travel less than full load rack tr: 9.50 rpm : 1340...1350 rpm : 300 Rack travel in mm : 6.30 ... 6.50 Del.quantity cm3/: 6.0...10.0 1000 s: (3.5...12.5) Spread cm3 : 3.50 1000 s: (5.50)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 d 6 Edition : 14.02.92

Replaces : 06.91 Test oil : ISO-4113

Combination no. : 0 400 876 383

Injection pump

Pump designation : PES6A1000410RS2762-1

EP type number : 0 410 806 008

Governor

Governor design. : RSV400...1100A2C2204

-8L

: 0 420 232 551 Governer no.

Customer-spec. information

Customer : JOHN DEERE

Engine : 6076TDW02

1st version kW : 128.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 190...200

Test nozzle holder

: 1 688 901 101 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 2.95...3.05 : (2.90...3.10)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 10.0...10.2

100 s: (9.8...10.4)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 2.9...3.3

100 s: (2.7...3.5)

cm3 : 0.6 Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 100.5...102.5 Del.quantity

1000 : (98.5...104.5)

: 4.00 Spread cm3

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 9.70

Speed rpm : 1150...1160

2nd rack travel in: 4.00

Speed rpm : 1195...1205

3rd rack travel in: 4.00

Speed rpm : 1195...1225 4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever

position degrees: 15...23

Setting point w/out bumper spring

rpm : 400

Rack travel in mm: 5.5

Testing:

Speed rom Minimum rack trave: 19.00

rpm : 400

Rack travel in mm : 5.90...6.11

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.70...10.80

2nd speed rpm : 650

Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

: 650 Speed rpm

Del.quantity cm3/: 134.0...136.0 1000 s: (132.0...138.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70

rpm : 1150...1160 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 100.0...120.0 1000 s: (95.0...125.0)

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.90...6.10 Del.quantity cm3/ : 29.0...33.0 1000 s: (27.0...35.0)

cm3 : 6.00Spread 1000 s: (8.00)

Remarks:

: JOHNE DEERE #RE47356

Start-of-delivery mark = 13,5° after

start of delivery cyl. 1.

Starting/full-load transition speed from holding magnet = 450 1/min.

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DEE 7,7 d 7 Edition : 14.02.92 : 08.91 Replaces : ISO-4113 Test oil Combination no. : 0 400 876 391 Injection pump Pump designation: PES6A100D410RS2762-1 EP type number : 0 410 806 008 Governor Governor design. : RSV425...1100A2C2225 -5L : 0 420 232 566 Governer no. Customer-spec. information Customer : JOHN DEERE Engine : 6076ARW-09 1st version kW : 145.0 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 457 413 010 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 101 Opening . : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test Lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.95...3.05 : (2.90...3.10) Prestroke mm Rack travel in mm: 10.50 : 1-5-3-6-2-4 Firing order Phasina : 0-60-120-180-240-300 Tolerance $+ - ^{\circ} : 0.50 (0.75)$ Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1100 Rack travel in mm : 11.90...12.00 Del.quantity cm3/: 11.4...11.6 100 s: (11.2...11.8) Spread cm3 : 0.4100 s: (0.6) rpm : 425.02nd speed Rack travel in mm: 5.7...5.9 Del.quantity cm3/: 2.6...3.0 100 s: (2.4...3.2) Spread cm3 : 0.6 100 s: (0.8) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 3.00FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1100 Aneroid pressure h: 900 Del.quantity : 114.0....18.0) : 4.00 1000 : (6.50) RATED SPEED 1st version Control Lever

position degrees: 37...45

Testing:

1st rack travel in: 10.90 Speed rpm : 1140...1150

2nd rack travel in: 4.00

rpm : 1205...1215 Speed

3rd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 13...21

Setting point w/out bumper spring

rom : 425

Rack travel in mm: 5.3

Testing:

Speed : 100 rom

Minimum rack trave: 19.00

: 425 rpm

Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.90...12.00 2nd speed rpm : 750 Rack travel in m: 13.90...14.10

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 500 rom

Pressure hPa : 900

Rack travel mm : 13.90...14.10

ੁ _ਵ Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.70...11.90

2nd pressure hPa : 535 Rack travel in m: 12.30...12.40

3rd pressure hPa : 720

Rack travel in m: 13.30...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm: 750
Del.quantity cm3/: 143.5...147.5
1000 s: (141.5...149.5)

Aneroid pressure h: -

Speed : 500 rpm

Del.quantity cm3/: 129.0...133.0 1000 s: (127.0...135.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...120.0 1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 425

Rack travel in mm: 5.70...5.90 Del.quantity cm3/: 26.0...30.0 1000 s: (24.0...32.0)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47502

Start-of-delivery mark = 13,5° after start of delivery cyl. 1.

Adjustment without torque-control spring retainer with 0,5 mm less

control-rod travel. Increase in full-load delivery with torque-control

spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : AIF

Edition : 22.01.92

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 393

Injection pump

Pump designation : PES6A90D410RS2723

: 0 410 896 085 EP type number

Governor

: RSV300...1350A0c2257 Governor design.

: 0 420 232 568 Governer no.

Customer-spec. information

Customer : IVECO-AIFO

Engine : 8061.SRM 25

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.20...2.30 Prestroke mm

: (2.15...2.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 13.60...13.70

Del.guantity cm3/: 10.9...11.0

100 s: (10.7...11.2)

cm3 : 0.3Spread

100 s: (0.4)

rpm : 300.0 2nd speed Rack travel in mm: 9.0...9.2

Del.quantity cm3/: 2.3...2.7

100 s: (2.1...2.9) cm3 : 0.2 100 s: (0.4)

Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350

: 109.0...110.0 Del.quantity

1000 : (107.0...112.0)

: 3.00 Spread cm3

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing:

1st rack travel in: 12.70

rpm : 1390...1400 Speed

2nd rack travel in: 4.00

rpm : 1595...1625 Speed

4th rack travel in: 1700

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 74...82

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 5.5 : 300 Speed rpm

Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00

rom : 525...585 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed

t speed rpm : 1350 Rack travel in m: 13.60...13.70

2nd speed rpm : 500

Rack travel in m: 13.60...13.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 500 rpm

Del.quantity cm3/: 98.0...100.0

1000 s: (95.5...102.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1390...1400

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm: 17.20...17.60

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAN 20,9 z Edition : 14.02.92 : 04.89 Replaces : ISO-4113 lest oil Combination no. : 0 401 840 108 Injection pump Pump designation : PE12P110A520/4LS849 : 0 411 810 041 EP type number Governor Governor design. : RQV250...1050PA889 Governer no. **: 0** 421 813 696 Customer-spec. information Customer : MAN : D2842ME Engine 1st version kW : 305.8 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test Lines : 1 680 750 089 Outside diameter x Wall thickness : 8.00x2.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 3.00...3.10 : (2.95...3.15) Rack travel in mm : 9.00...12.00 B01

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Firing order Phasing : 0-45-60-105-120-165-180-225-240-285-300-Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 12 BASIC SETTING 1st speed rpm : 1050Rack travel in mm : 10.40...10.50 Del.quantity cm3/: 12.8...13.1 100 s: (12.6...13.4) cm3 : 0.4Spread 100 s: (0.7) 2nd speed rpm : 250.0 Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 1.5...2.0 100 s: (1.2...2.2) Spread cm3 : 0.4100 s: (0.7) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 250 travel mm : 0.90...1.30 rpm : 800 2nd speed : 5.30...5.70 travel mm 3rd speed : 1050 rpm : 7.50...7.70 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1125 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1050 Speed

: 128.5...131.5 Del.quantity 1000 : (126.0...134.0) Spread cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version Control Lever position degrees: 113...121 Testing: 1st rack travel in: 9.40 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm: 1170...1200 4th rack travel in: 1300 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 63...71 Testing: Speed rpm : 100 Minimum rack trave: 7.10 Speed rpm : 250 Rack travel in mm : 5.50...5.70 CONSTANT REGULATION rpm : 385...510 Speed START CUT-OUT Speed 1/min: 190 (210) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.40 rpm : 1090...1100 Speed Remarks: : MAN-NR. 2-7905 **APPLICATION** Rail car

Prestroke mm : 4.20...4.30 : (4.15...4.35) Rack travel in mm : 9.00...12.00 Firing order : 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAN 21,0 c : 31.01.92 Test sheet Edition : 12.91 Replaces Test oil : 1SO-4113 : 0-45-60-105-120-165-Phasing Combination no. : 0 401 840 771 180-225-240-285-300-Phasing : 345 Injection pump Tolerance + - ° : 0.50 (0.75) Pump designation: PE12P12OA520/4LS3854 EP type number : 0 411 820 728 Time to cyl. no. : 12 Governor Governor design. : RQ950PA664-3 BASIC SETTING : 0 421 801 629 Governer no. 1st speed rpm : 700 Customer-specs information Customer : MAN Rack travel in mm : 13.00...13.10 : D2842LE Engine Del.quantity cm3/: 25.0...25.2 1st version kW : 443.0 100 s: (24.7...25.5) : 1900 Rated speed Spread cm3 : 0.5TEST BENCH REQUIREMENTS 100 s: (0.9) Test oil inlet temp. °C : 38...42 rpm : 250.0 2nd speed Rack travel in mm: 4.5...4.7 Overflow valve Del.quantity cm3/: 1.7...2.3 : 1 419 992 198 100 s: (1.4...2.6) Spread cm3 : 0.8Inlet press., bar: 1.50 100 s: (1.2) Test nozzle holder FULL LOAD DELIV. AT FULL LOAD STOP : 1 688 901 019 assembly 1st version Opening Speed rpm : 700 : 207...210 : 250.0...252.0 pressure, bar Del.quantity 1000 : (247.0...255.0) Orifice plate : 5.00 Spread cm3 diameter mm : 0,8 1000 : (9.00) RATED SPEED Test Lines : 1 680 750 075 1st version Outside diameter x Wall thickness Testing: : 8.00x2.50x1000 x Length mm 1st rack travel in: 12.00 rpm : 1020...1030 Speed (A) Injection pump setting values 2nd rack travel in: 4.00 Speed rpm : 1070...1100 4th rack travel in: 1400 Insp. values in parentheses Set equal delivery quant.

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

BREAKAWAY

rpm : 0.00...1.00

Speed

B03

per values ____

1st version 1mm rack travel less than

full load rack tr: 12.00 Speed rpm : 1020...1030

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Phasing : 0-60-120-180-240-300 Note remarks Tolerance $+ - ^{\circ} : 0.50 (0.75)$: DAF 11,7 m : 14.02.92 Test sheet Edition BEGINNING OF DELIVERY DIFFERENCE Replaces : 09.91 Test oil : ISO-4113 betw. rack trav. m: 4.90...5.10 & maximum rack tra: 13.0...14.0 Difference ° CS : 2.00...4.00 Combination no. : 0 401 846 566 Injection pump BASIC SETTING Pump designation : PE6P110A320RS526 EP type number : 0 411 816 178 1st speed rpm: 600 Governor Governor design. : RQ275/1000PA818-3 Rack travel in mm : 14.20...14.30 Governer no. : 0 421 801 534 Del.quantity cm3/: 15.6...15.8 Customer-spec. information Customer 100 s: (15.3...16.0) : DAF Engine : LT 160 G Spread cm3 : 0.4TEST BENCH REQUIREMENTS 100 s: (0.7) 2nd speed rpm : 300.0 Rack travel in mm : 8.0...8.2 Del.quantity cm3/ : 2.5...3.0 Test oil inlet temp. °C : 38...42 Overflow valve 100 s: (2.3...3.3) : 1 419 992 198 cm3 : 0.4Spread 100 s: (0.7) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Test nozzle holder Control-Lever position : 0 681 343 009 assembly Degree: -1 rpm : 600 Opening. Rack travel in mm : 15.20...16.40 pressure, bar : 172...175 FULL LOAD DELIV. AT FULL LOAD STOP Test Lines : 1 680 750 015 1st version Speed rpm : 600 Aneroid pressure h: 1000 Outside diameter x Wall thickness : 156.0...158.0 Del.quantity : 6.00x1.50x600 1000 x Length mm : (153.5...160.5) : 4.00 cm3 Spread (A) Injection pump setting values 1000 : (7.50) Insp. values in parentheses Set equal delivery quant. RATED SPEED per values 1st version BEGINNING OF DELIVERY Test pressure, bar: 25...27 Setting point: Speed rom

Rack travel in mm: 15.8

1st rack travel in: 12.40 Speed rpm : 1030...1045 2nd rack travel in: 4.00

Testing:

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 13.00...14.00

Firing order : 1-5-3-6-2-4

Speed rpm : 1090...1120 4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 8.1

Testing:

Speed rpm : 100 Minimum rack trave: 10.70 : 300 rpm

Rack travel in mm : 8.00...8.20

Rack travel in mm : 3.00

: 370...410 Speed rom

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

rpm : 980 1st speed

Rack travel in m: 13.40...13.60

: 600 2nd speed וחכירו

Rack travel in m: 14.40...14.60

3rd speed rpm : 750

Rack travel in m: 13.90...14.10

: 825 4th speed rpm

Rack travel in m: 13.60...13.80

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 600 rom Pressure hPa : 1000

Rack travel mm : 14.20...14.30

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.70...12.90 2nd pressure hPa : 290 Rack travel in m: 13.80...13.90

3rd pressure hPa : 260 Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm : 980

Del.quantity cm3/: 136.0...138.0

1000 s: (132.0...142.0)

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/: 122.0...124.0 1000 s: (119.5...126.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40

rpm : 1030...1045 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 280.0...320.0 1000 s: (276.0...324.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300

Rack travel in mm : 8.00...8.20

Del.quantity cm3/: 25.5...30.5 1000 s: (23.0...33.0)

cm3 : 4.50 Spread 1000 s: (7.50)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

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BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.80...3.90 Prestroke mm : (3.75...3.95) Note remarks Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Test sheet : ENA 11,9 e : 14.02.92 : 11.91 Edition Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 401 846 861 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation: PE6P120A320RS3176-1 EP type number : 0 411 826 767 BASIC SETTING Governor Governor design. : RQV250...1050PA808 1st speed rpm: 650 : 0 421 813 553 Governer no. Rack travel in mm : 12.40...12.50 Customer-spec. information Customer : ENASA Del.quantity cm3/: 21.2...21.4 Engine : 96 R1 AX 100 s: (20.9...21.7) 1st version kW : 250.0 cm3 : 0.5 Spread Rated speed : 2100 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 250.0 Rack travel in mm : 4.2...4.4 Test oil inlet temp. °C : 38...42 Del.quantity cm3/ : 2.5...3.1 100 s: (2.2...3.4) Overflow valve Spread cm3 : 0.8: 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL rpm : 250 1st speed Opening travel mm : 1.00...1.40 : 207...210 pressure, bar 350 2nd speed rpm 1.90...2.50 travel mm Orifice plate 3rd speed : 700 תוכוח : 4.50...5.10 diameter mm : 0,8 travel mm rpm : 1095 4th speed travel mm : 8.00...8.20 Test Lines : 1 680 750 067 5th speed rpm : 1185 : 9.00...9.40 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x1.50x1000 x Length mm Control-lever position Degree: -1 rpm : 1110 (A) Injection pump setting values Speed Insp. values in parentheses Set equal delivery quant. Rack travel in mm: 15.20...17.80 per values _ FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 Speed rpm : 650

Aneroid pressure h: 900

Del.quantity : 212.0...214.0

1000 : (209.0...217.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 115...123

Testing:

1st rack travel in: 11.40

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1185...1215

4th rack travel in: 1300

rom : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 76...84

Testing:

Speed rpm : 100 Minimum rack trave: 5.90 rpm : 250

Rack travel in mm : 4.20...4.40

CONSTANT REGULATION

rpm : 250...350 Speed

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rpm hPa : 900 Pressure

Rack travel mm : 12.40...12.50

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.90...9.30 2nd pressure hPa : 520 Rack travel in m: 11.50...11.60

3rd pressure hPa : 235

Rack travel in m: 9.80...10.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm : 1030 beea

Del.quantity cm3/: 215.0...221.0 1000 s: (212.0...224.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40

rpm : 1090...1160 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 155.0...175.0 1000 s: (151.0...179.0)

Rack travel in mm : 19.50...21.00

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Note remarks : VOL 10,0 y : 21.02.92 Test sheet Edition Phasing : 0-60-120-180-240-300 Replaces : 11.91 Test oil Tolerance + - ° : 0.50 (0.75): ISO-4113 Combination no. : 0 401 846 902 Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PE6P110A320RS308G-4 EP type number : 0 411 816 766 1st speed rpm: 700 Governor : RQV250...1025PA921 Rack travel in mm : 13.40...13.50 Governor design. -18: 0 421 813 801 Del.quantity cm3/: 19.6...19.8 Governer no. 100 s: (19.4...20.0) Customer—spec. information Customer : VOLVO-TRUCK Spread cm3 : 0.4: TD102FL Engine 100 s: (0.7) : 239.0 1st version kW : 2050 Rated speed 2nd speed rpm : 250.0Rack travel in mm : 3.4...3.6 Del.quantity cm3/ : 1.5...1.9 100 s: (1.2...2.2) TEST BENCH REQUIREMENTS Test oil cm3 : 0.4Spread inlet temp. °C : 38...42 100 s: (0.7) Overflow valve (B) Setting of injection pump : 1 417 413 025 with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL 1st speed rpm : 250 Test nozzle holder travel mm : 1.00...1.40 : 0 681 343 009 assembly 2nd speed rpm : 350 : 2.20...2.80 travel mm **Opening** 3rd speed : 700 mgg pressure, bar : 172...175 travel mm : 6.30...6.70 1085 4th speed rpm : 7.70...7.90 : 1170 travel mm : 1 680 750 015 Test lines 5th speed rpm : 9.10...9.50 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x1.50x600 Control-lever position x Length mm Degree: -1
Speed rpm: 1120
Rack travel in mm: 15.20...17.80 (A) Injection pump setting values Insp. values in parentheses

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1000

Del.quantity : 196.0...198.0 1000 : (194.0...200.0)

B₀₉

Set equal delivery quant.

: 3.00...3.10

: (2.95...3.15)

per values ____

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

Prestroke mm

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version Control Lever

position degrees: 113...121

Testina:

1st rack travel in: 12.40 Speed rpm : 1065...1075 2nd rack travel in: 4.00

rpm : 1140...1170 Speed

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 59...67

Testina:

Speed : 100 nen Minimum rack trave: 5.00 : 250 rom

Rack travel in mm : 3.40...3.60

CONSTANT REGULATION

speed rpm : 250 ... 370

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm hPa : 1000 Pressure

Rack travel mm : 13,40,...13,50

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 90

Rack travel in m: 10.10...10.20

3rd pressure hPa : 680 Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 700 Speed

Del.quantity cm3/: 134.5...136.5 1000 s: (131.5...139.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.40

Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 160.0...190.0

1000 s: (156.0...194.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.40...3.60
Del.quantity cm3/ : 15.0...19.0

1000 s: (12.0...22.0)

Spread cm3 : 4.00

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : VOL 10,0 y1 : 21.02.92 Edition : 11.91 Replaces Test oil : ISO-4113 Combination no. : 0 401 846 903 Injection pump Pump designation: PE6P110A320RS3080-5 EP type number : 0 411 816 767 Governor Governor design. : RQV250...950PA921-19 : 0 421 813 802 Governer no. Customer-spec, information Customer : VOLVO-TRUCK Engine : TD102FM 1st version kW : 235.0 Rated speed : 1900 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Openina . : 172...175 pressure, bar Test Lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rpm : 700 ist speed Rack travel in mm : 13.40...13.50 Del.quantity cm3/: 19.6...19.8 100 s: (19.4...20.0) cm3 : 0.4Spread 100 s: (0.7) rpm : 250.0 2nd speed Rack travel in mm : 3.4...3.6 Del.quantity cm3/ : 1.5...1.9 100 s: (1.2...2.2) cm3 : 0.4Spread 100 s: (0.7) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 250 1st speed : 1.00...1.40 travel mm 2nd speed : 350 rpm : 2.20...2.80 travel mm rpm : 750 3rd speed : 6.30...6.70 travel mm : 995 4th speed rpm travel mm : 8.20...8.40 5th speed : 1060 rpm : 9.30...9.70 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1000 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 Aneroid pressure h: 1000 Del.quantity : 190.0....200.0)

: 1-5-3-6-2-4

Firing order

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 3.00...3.10 : (2.95...3.15) Spread cm3: 4.00

1000 : (7.50)

RATED SPEED

1st version Control Lever

position degrees: 120...128

Testina:

1st rack travel in: 12.40 Speed rpm : 990...1000

2nd rack travel in: 4.00

rpm : 1050...1080 Speed

4th rack travel in: 1250

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 59...67

Testing:

Speed : 100 תוכויו Minimum rack trave: 5.00 Speed rpm : 250

Rack travel in mm : 3.40...3.60

CONSTANT REGULATION

Speed rpm : 250...360

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm hPa : 1000 Pressure

: 13.40...13.50 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 90 Rack travel in m: 10.10...10.20

3rd pressure hPa : 680

Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700
Del.quantity cm3/: 134.5...136.5
1000 s: (131.5...139.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.40

Speed rom : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 160.0...190.0

1000 s: (156.0...194.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.40...3.60
Del.quantity cm3/ : 15.0...19.0
1000 s: (12.0...22.0)

Spread cm3 : 4.00

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.50 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MB 11,0 x : 24.01.92 Test sheet Edition Replaces : 01.91 Test oil : ISO-4113

Combination no. : 0 401 846 910

Injection pump

Pump designation : PE6P110A320LS3851 EP type number : 0 411 816 765

Governor

Governor design. : RQ300/1050PA187-26

: 0 421 801 489 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM441

1st version kW : 160.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55) Rack travel in mm : 9.00...12.00

: 6-3-5-2-4-1 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.20...12.30

Dal.quantity cm3/: 12.2...12.4

100 s: (11.9...12.6)

cm3 : 0.8Spread

100 s: (1.3)

2nd speed rpm : 300.0 Rack travel in mm : 7.4...8.0 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm3 : 0.6100 s: (1.1)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 650 Speed Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Del.quantity : 122.0...124.0

1000 : (119.5...126.5)

: 8.50 Spread cm3

1000 : (13.00)

RATED SPEED

1st version

Setting point:

Speed Speed rpm : 650 Rack travel in mm : 13.5

Testing: 1st rack travel in: 11.20 Speed rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1175...1205 Speed 4th rack travel in: 1300 rpm : 0.00...2.00 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 6.7 Testing: rpm : 200 Speed Minimum rack trave: 8.50 rpm : 300 Rack travel in mm : 6.40...7.00
Rack travel in mm : 2.00
Speed rpm : 390...430 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm_ : 600 Del.quantity cm3/: 119.0...125.0 1000 s: (116.5...127.5) Spread cm3 : 11.00 1000 s: (14.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.20 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0) Remarks: :

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 11,0 w : 24.01.92 Test sheet Edition Replaces : 01.91 Test oil : ISO-4113 Combination no. : 0 401 846 918 Injection pump Pump designation : PE6P110A320LS3851 EP type number : 0 411 816 765 Governor Governor design. : RQV300...1050PA884-6 : 0 421 813 832 Governer no. Customer-spec. information Customer : MERCEDES-BENZ Engine : 0M441 1st version kW : 160.0 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder assembly : 1 688 901 101 Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY Test pressure, bar: 25...27 : 4.40...4.50 Prestroke mm : (4.35...4.55) Rack travel in mm : 9.00...12.00 : 6-3-5-2-4frigg order Phasing : 0-60-120-180-240-300 Tolerance + - * : 0.50 (0.75) Time to cyl. no. BASIC SETTING 1st speed rpm: 1050 Rack travel in mm : 12.20...12.30 Deliguantity cm3/: 12.2...12.4

100 s: (11.9...12.6) Spread cm3 : 0.8100 s: (1.3)

2nd speed rpm : 300.0 Rack travel in mm : 7.4...8.0 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.4) Spread cm3 : 0.6100 s: (1.1)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL rpm : 300 1st speed travel mm : 0.50...1.00 2nd speed rpm : 460 : 2.70...3.20 travel mm 3rd speed rpm : 738 : 4.60...5.10 travel mm rpm : 1107 4th speed : 7.90...8.40 travel mm rpm : 1370 5th speed : 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1050 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1050 Speed : 122.0...124.0 Del.quantity 1000 : (119.5...126.5) Spread cm3 : 8.501000 : (13.00) RATED SPEED 1st version Control lever position degrees: 116...124 Testing: 1st rack travel in: 11.20 Speed rpm : 1090...1100 2nd rack travel in: 4.00 Speed rpm : 1175...1205 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 83...91 Testing: Speed rpm : 200 Minimum rack trave: 8.50 Speed rpm : 300 Rack travel in mm : 6.40...7.00 CONSTANT REGULATION rpm : 300...500 Speed START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version rpm : 600 Speed Del.quantity cm3/: 119.0...125.0 1000 s: (116.5...127.5) Spread cm3 : 11.00 1000 s: (14.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.20 Speed rpm : 1090...1100 Speed STARTING FUEL DELIVERY

Remarks:

BOSCH INJ. PUMP T	EST SPECIFICATIONS	+
Note remarks		
Test sheet Edition Replaces Test oil	: HAE 12.0 a : 22.01.92 : 03.91 : ISO-4113	+++++++++++++++++++++++++++++++++++++++
Combination no.	: 0 401 846 933	Ŧ
Governor	: PE6P110A320RS3260 : 0 411 816 775 : RQ250/1050PA969 : 0 421 801 538	† + + +
Customer—spec. in		+
Engine	: X613D NA	‡
TEST BENCH REQUIREMENTS		‡
Test oil inlet temp. °C	: 38 42	+++++++++++++++++++++++++++++++++++++++
Overflow valve	: 1 417 413 025	†
Inlet press., bar	: 1.50	Ŧ
Test nozzle holde assembly	r : 0 681 343 009	+
Opening pressure, bar	: 172175	T + + + + + + + + + + + + + + + + + + +
Test lines	: 1 680 750 015	‡
Outside diameter x Wall thickness x Length mm	: 6.00x1.50x600	++++
(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values		† † † †
BEGINNING OF DELIVERY Test pressure, bar: 2527		†

```
Tolerance + - °
                   : 0.50 (0.75)
Time to cyl. no.
                   : 1
BASIC SETTING
1st speed
              rpm : 1035
Rack travel in mm : 11.40...11.50
Del.quantity cm3/: 13.0...13.3
             100 s: (12.7...13.5)
Spread
             cm3 : 0.4
             100 s: (0.7)
             rpm : 250.0
2nd speed
Rack travel in mm : 7.6...3.0
Del.quantity cm3/: 1.5...2.0
100 s: (1.2...2.2)
             cm3 : 0.4
100 s: (0.7)
Spread
GUIDE SLEEVE POSITION
Control-Lever position
            Degree: -1
             rpm : 500
Speed
Rack travel in mm : 12.60...14.20
FULL LOAD DELIV. AT FULL LOAD STOP
1st version
Speed
                  : 1035
             rpm
Deliquantity
                   : 130.0...133.0
            1000 : (127.5...135.5)
Spread
            cm3
                  : 4.00
            1000
                  : (7.50)
RATED SPEED
1st version
Setting point:
Speed
            rpm
Rack travel in mm: 13.4
Testing:
1st rack travel in: 10.40
                 : 1085...1100
  Speed
            rpm
2nd rack travel in: 4.00
            rpm : 1110...1140
  Speed
4th rack travel in: 1250
  Speed
                  : 0.00...1.80
            man
```

: 0-60-120-180-240-300

Phasing

LOW IDLE 1

Firing order

Prestroke mm : 3.60...3.70 : (3.55...3.75) Rack travel in mm : 9.00...12.00

: 1-5- 3- 6- 2-

Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 7.8 Testing: Speed rpm : 100 Minimum rack trave: 9.30 rpm : 250 Speed Rack travel in mm : 7.70...7.90 Rack travel in mm : 2.00 Speed rpm : 295...335 TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1035 Rack travel in m: 11.40...11.50 2nd speed rpm : 600 Rack travel in m: 12.00...12.30 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 600 Speed Del.quantity cm3/: 129.0...134.0 1000 s: (126.0...137.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.40 rpm : 1085...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 180.0...200.0 1000 s: (176.0...204.0) LOW IDLE Speed rpm : 250
Rack travel in mm : 7.60...8.00
Del.quantity cm3/: 15.0...20.0
1000 s: (12.5...22.5)
Spread cm3 : 4.50 1000 s: (7.50) Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.40...2.50 : (2.30...2.50) Rack travel in mm : 9.00...12.00 Note remarks : VOL 5,9 b 1 : 14.02.92 Test sheet : 1-5-3-6-2-4 Firing order Edition : 12.91 Replaces Test oil : ISO-4113 Phasing : 0-60-120-186-240-300 Combination no. : 0 401 846 938 Tolerance $+ - ^{\circ} : 0.30 (0.75)$ Injection pump : PE6P110A320RS3266 Pump designation Time to cyl. no. : 1 EP type number : 0 412 816 777 Governor BASIC SETTING : RQV300...1300PA996 Governor design. -1K 1st speed rpm: 780 Governer no. : 0 421 815 278 Rack travel in mm : 10.30...10.40 Customer-spec. information Customer : VOLVO-TRUCK Del.quantity cm3/: 10.2...10.4 Engine : TD63E 100 s: (10.0...10.5) 1st version kW : 133.0 Spread cm3 : 0.5Rated speed : 2600 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 330.0
Rack travel in mm : 5.4...5.6
Del.quantity cm3/: 1.7...2.1 Test oil inlet temp. °C : 38...42 100 s: (1.4...2.4) Overflow valve cm3 : 0.7Spread : 1 457 413 010 100 s: (1.1) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 101 GUIDE SLEEVE TRAVEL assembly 1st speed rpm : 330 Opening : 1.20...1.60 travel mm pressure, bar : 207...210 : 500 2nd speed rbm : 2.90...3.50 travel mm Orifice plate 3rd speed 900 rpm diameter mm : 0,6 4.70...5.30 travel mm 1370 4th speed rpm 9.80...10.00 travel mm Test lines : 1 680 750 008 1450 5th speed rpm : 11.00...11.40 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x2.00x600 x Length mm Control-lever position Degree: -1 rpm : 1470 (A) Injection pump setting values Insp. values in parentheses Rack travel in mm : 6.00...12.00 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 780

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Aneroid pressure h: 1200 3rd pressure hPa : 650 : 102.0...104.0 Del.quantity Rack travel in m: 10.60...10.80 1000 : (100.0...106.0) Spread cm3 : 5.00 FUEL DELIVERY CHARACTERISTICS 1000 : (9.00) RATED SPEED 1st version Aneroid pressure h: 1200 Speed rpm : 1050
Del.quantity cm3/: 114.0...118.0
1000 s: (111.0...121.0) 1st version Control lever position degrees: 114...122 cm3 : 8.00 Spread Testing: 1000 s: (12.0) 1st rack travel in: 10.20 Aneroid pressure h: 1200 rpm : 1360...1370 Speed Speed rpm : 1300 Del.quantity cm3/: 118.0...124.0 1000 s: (115.0...127.0) 2nd rack travel in: 4.00 rom: 1420...1450 Speed 4th rack travel in: 1520 Aneroid pressure h: --Speed rpm: 780
Del.quantity cm3/: 73.0...75.0
1000 s: (70.0...78.0) rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 70...78 **BREAKAWAY** Testina: Speed 1st version rom Minimum rack trave: 7.00 1mm rack travel less than : 330 Speed ממיז Rack travel in mm : 5.40...5.60 full load rack tr: 10.20 Speed rpm : 1360...1370 CONSTANT REGULATION Speed rpm : 330...600 STARTING FUEL DELIVERY TORGUE CONTROL Dimension a mm : 0.90 Speed : 100 rpm Del.quantity cm3/: 100.0...130.0 1000 s: (96.0...134.0) Rack travel in mm: 10.40...10.90 Torque control curve - 1st version 1st speed rpm : 780 Rack travel in m: 10.30...10.40 and speed rpm : 1050 Rack travel in m: 10.80...11.00 2nd speed rpm LOW IDLE 3rd speed rpm : 1300 Rack travel in m: 11.20...11.40 Speed rpm : 330 Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 17.0...21.0 1000 s: (14.0...24.0) Spread cm3 : 7.00 1000 s: (11.00) Aneroid/Altitude Compensator Test 1st version Setting Remarks: Speed : 1300 rom Pressure hPa : 1200 Rack travel mm : 11.20...11.40 Delivery-valve spring pre-tension = 2.40...2.60 mm. Measurement Permissible alteration from 2.20...2.90 1/min: 1300 Speed 1st pressure hPa : -Start-of-delivery setting with ROBO Rack travel in m: 8.50...8.70 diaphragm. 2nd pressure hPa : 140

Rack travel in m: 8.70...8.80

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DAF Edition : 14.02.92 Replaces : ISO-4113 Test oil Combination no. : 0 401 846 953 Injection pump Pump designation : PE6P110A720RS3225Y EP type number : 0 411 816 782 Governor Governor design. : RQ275/1200PA913-1 : 0 421 801 549 Governer no. Customer-spec. information Customer : DAF Engine : HS 200 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Openina pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00
Firing order : 1-5- 3- 6- 2- 4

Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1000 Rack travel in mm : 12.70...12.80 Del.quantity cm3/: 12.9...13.1 100 s: (12.6...13.3) cm3 : 0.4Spread 100 s: (0.7) rpm : 275.0 2nd speed Rack travel in mm: 7.2...7.4 Del.quantity cm3/: 1.4...1.9 100 s: (1.1...2.1) cm3 : 0.4Spread 100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 550 Speed Rack travel in mm : 15.20...16.40 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1000 Aneroid pressure h: 1000 Del.quantity : 129.0...131.0 1000 : (126.5...133.5) : 4.00 Spread cm3 1000 : (7.50) RATED SPEED 1st version Setting point: Speed Rack travel in mm: 15.8 Testing: 1st rack travel in: 11.70 rpm : 1235...1250 Speed 2nd rack travel in: 4.00 : 1320...1350 Speed rpm 4th rack travel in: 1450 Speed : 0.00...1.40 rom LOW IDLE 1 Setting point w/out bumper spring

: 0-60-120-180-240-300

Phasing

Speed rpm : 275 Rack travel in mm: 4.8 Testing: Speed rpm : 100 Minimum rack trave: 6.70 Speed : 275 rpm Rack travel in mm : 4.70...4.90 Rack travel in mm : 2.00 Speed rpm : 340...380 TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.70...13.80 2nd speed rpm : 1200 Rack travel in m: 13.60...13.80 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 1000 Pressure Rack travel mm : 12.70...12.80 Measurement 1/min : 600Speed 1st pressure hPa : -Rack travel in m: 10.80...11.00 2nd pressure hPa : 360 Rack travel in m: 12.10...12.20 3rd pressure hPa : 270 Rack travel in m: 11.40...11.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 600 Del.quantity cm3/: 87.0...89.0 1000 s: (84.5...91.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.70 Speed rpm : 1235...1250 LOW IDLE

rpm : 275

Rack travel in mm : 4.70...4.90
Remarks:

B22

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS Phasing : 0~60-120-180-240-300 Note remarks Tolerance + - ° : 0.50 (0.75) Test sheet : DAF Edition : 14.02.92 BASIC SETTING Replaces Test oil : ISO-4113 1st speed rpm: 1000 Combination no. : 0 401 846 954 Rack travel in mm : 12.90...13.00 Injection pump Del.quaritity cm3/: 12.9...13.1 Pump designation : PE6P110A720RS3225Y EP type number : 0 411 816 782 100 s: (12.6...13.3) Governor Governor design. : RQV275...1200PA910 Spread cm3 : 0.4Governer no. : 0 421 813 746 100 s: (0.7)Customer-spec. information 2nd speed rpm : 275.0 Rack travel in mm : 7.2...7.4 Customer : DAF Del.quantity cm3/: 1.4...1.9 Engine : HS 200 100 s: (1.1...2.1) TEST BENCH REQUIREMENTS Spread cm3 : 0.4100 s: (0.7) Test oil inlet temp. °C : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 417 413 025 GUIDE SLEEVE TRAVEL 1st speed rpm : 250 Inlet press., bar: 1.50 travel mm : 1.00...1.40 rpm : 450 2nd speed Test nozzle holder travel mm : 2.90...3.30 assembly : 0 681 343 009 3rd speed : 800 man : 4.70...5.10 travel mm Opening : 1200 4th speed rpm pressure, bar : 172...175 travel mm : 7.80...8.00 5th speed : 1500 r pm : 11.00...12.00 travel mm Test lines : 1 680 750 015 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 Speed rpm : 1235 Rack travel in mm : 15.20...17.80 x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values 1st version Speed rpm : 1000 BEGINNING OF DELIVERY Aneroid pressure h: 1000 : 129.0...131.0 1000 : (126.5...133.5) Test pressure, bar: 25...27 Del.quantity Prestroke mm : 3.70...3.80 Spread cm3 : 4.00 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 1000 : (7.50) RATED SPEED

1st version

Control lever position degrees: 116...124 Testing: 1st rack travel in: 11.90 rpm : 1240...1250 Speed 2nd rack travel in: 4.00 rpm : 1350...1380 Speed 4th rack travel in: 1450 Speed rpm : 0.00...1.40 LOW IDLE 1 Control Lever position degrees: 78...86 Testing: Speed : 100 mon: Minimum rack trave: 6.70 Speed rpm : 275 Rack travel in mm : 4.70...4.90 CONSTANT REGULATION rpm : 280...400 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm Pressure hPa : 1000 : 12.90...13.00 Rack travel mm Measurement Speed $1/\min : 600$ 1st pressure hPa : -Rack travel in m: 10.90...11.00 2nd pressure hPa : 360 Rack travel in m: 12.30...12.40 3rd pressure hPa : 270 Rack travel in m: 11.60...11.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 600 Del.quantity cm3/: 87.0...89.0 1000 s: (84.5...91.5) **BREAKAWAY** 1st version 1mm rack travel less than

Speed rpm : 1240...1250

LOW IDLE

Speed rpm: 275

Rack travel in mm : 4.70...4.90

Remarks:

. ...

full load rack tr: 11.90

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet

: UNI

Edition

: 31.01.92

Replaces

Test oil

: ISO-4113

Combination no.

: 0 401 846 963

Injection pump

Pump designation: PE6P120A720RS3291

EP type number

: 0 411 826 800

Governor

Governor design.

: RQV300...1000PA1016-

Governer no.

: 0 421 813 983

Customer-spec. information

Customer

: IVECO-UNIC

Engine

: 8210,22,419

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press. bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1000

Rack travel in mm : 11.00...11.10

bel.quantity cm3/: 20.6...20.8

100 s: (20.3...21.1)

Spread

cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 4.2...4.6 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

: 1045 1st speed

travel mm : 8.30...8.50

2nd speed : 300 rpm

travel mm : 1.10...1.50

3rd speed : 450 rpm

2.70...3.30 travel mm

: 700 4th speed rpm

travel mm : 4.60...5.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 8.70...11.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 206.0...208.0

1000 : (203.0...211.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 111...119

Testing:

1st rack travel in: 10.00

Speed rpm : 1040...1050 2nd rack travel in: 4.00

Speed rpm : 1110...1140 4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 61...69

Testing:

Speed rpm: : 100 Minimum rack trave: 6.50

: 300 Speed rom

Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

Speed rbm : 310...430

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 hPa : 1000 Speed man Pressure

Rack travel mm : 11.00...11.10

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.20...9.40 2nd pressure hPa : 200 Rack travel in m: 9.90...10.00

3rd pressure hPa : 215

Rack travel in m: 10.20...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 500

Del.quantity cm3/: 197.0...203.0 1000 s: (194.0...206.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 150.0...152.0 1000 s: (147.0...155.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 215.0...235.0 1000 s: (211.0...239.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 4.20...4.60 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

: 3.50...3.60 : (3.45...3.65) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Note remarks Rack travel in mm : 9.00...12.00 : 1-8-4-3-6-5-7-2 Firing order Test sheet : FIA 17,2 c1 : 24.01.92 Edition Replaces : 02.89 : ISO-4113 Test oil : 0-45-90-135-180-225-270-315 Phasina : 0 401 848 736 Combination no. Tolerance + - ° : 0.50 (0.75) Injection pump Pump designation : PE8P12DA92O/5LS3812 Time to cyl. no. : 1 EP type number : 0 411 828 709 Governor BASIC SETTING Governor design. : RQV300...1200PA357 : 0 421 813 188 Covernor no. 1st speed rpm: 1200 Customer-spec. information Rack travel in mm : 9.30...9.40 : IVECO-FIAT Customer Del.quantity cm3/: 15.0...15.2 : 8281.02.001 Engine 100 s: (14.7...15.5) : 257.4 : 2400 1st version kW cm3 : 0.5Rated speed Spread TEST BENCH REQUIREMENTS 100 s: (0.9) 2nd speed rpm : 300.0 Rack travel in mm : 5.3...5.7 Del.quantity cm3/ : 2.6...3.4 Test oil inlet temp. °C : 38...42 Overflow valve 100 s: (2.3...3.7) : 1 417 413 025 cm3 : 0.8Spread 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump Test nozzle holder with governor : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL Openina rpm : 300 1st speed pressure, bar : 207...210 : 1.30...1.70 travel mm 2nd speed man : 450 Orifice plate travel mm : 2.70...3.40 : 0.8 diameter im 3rd speed rpm : 900 travel mm 5.70...6.10 1200 4th speed rpm 8.20...8.40 1500 : 1 680 750 075 Test lines travel mm 5th speed mar Outside diameter travel mm : 11.00...12.00 x Wall thickness x Length mm : 8.00x2.50x1000 GUIDE SLEEVE POSITION Control-lever position (A) Injection pump setting values Degree: -1 rpm : 1200 Insp. values in parentheses Set equal delivery quant. Rack travel in mm : 15.20...17.80 per values __ FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version

Speed

rpm : 1200

Del.quantity : 150.0...152.0 1000 : (147.0...155.0)

Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 113...121

Testing:

1st rack travel in: 8.30

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1305...1335

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 63...71

Testing:

Speed rpm : 100 Minimum rack trave: 7.00 Speed rpm : 300

Speed rpm : 300 Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 330...430

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.30

Speed rpm : 1240...1250

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,6 k 8
Edition : 03.03.89
Replaces : 2.12.88
Test oil : ISO-4113

Combination no. : 0 401 848 762

Injection pump

Pump designation : PE8P120A320LS3807-10

EP type number : 0 411 828 713

Governor

Governor design. : RQV300...1150PA545-7

Governor no. : 0 421 813 595

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM 422 A

1st version kW : 243.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10

: (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 8-7-

: 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 15.9...16.1

100 s: (15.6...16.4)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 5.0...5.2

Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.1)

Spread cm3: 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 300

travel rum : 1.40...1.60

2nd speed rpm: 800

travel mm : 6.00...6.20

3rd speed rpm : 1200

travel mm : 8.00...8.50

4th speed rpm: 1300

travel mm : 9.70...10.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1230

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rom : 1150 Speed Aneroid pressure h: 700 Del.quantity : 159.0...161.0 1000 : (156.0...164.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 46...54 Testing: 1st rack travel in: 9.70 rpm : 1190...1200 Speed 2nd rack travel in: 4.00 Speed rpm : 1250...1280 4th rack travel in: 1400 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 15...23 Testing: Speed rpm : 100 Minimum rack trave: 6.70 rpm Rack travel in mm : 5.00...5.20 CONSTANT REGULATION rpm : 300...400 Speed TORQUE CONTROL Dimension a mm : 0.30 Torque control curve - 1st version rpm : 1150 1st speed Rack travel in m: 10.70...10.80 : 750 2nd speed rom Rack travel in m: 11.00...11.20 3rd speed rpm : 700 Rack travel in m: 11.00...11.20 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 חמר hPa : -Pressure : 10.00...10.30 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 450 Rack travel in m: 10.10...10.20

Rack travel in m: 10.50...10.70 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rom : 750 Del.quantity cm3/ : 173.5...175.5 1000 s: (170.5...178.5) cm3 : 7.00Spread 1000 s: (12.0) Aneroid pressure h: 700 Aneroid pressure h: -Speed rpm : 500
Del.quantity cm3/: 138.0...140.0
1000 s: (135.0...143.0) Spread cm3 : 7.00 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.70 rpm : 1190...1200 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0) Remarks:

2nd pressure hPa : 500

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 12,8 c1 : 31.01.92 Edition : 12.91 Replaces Test oil : ISO-4113

: 0 401 848 820 Combination no.

Injection pump

Pump designation : PE8P120A72ULS3281-1

: 0 411 828 727 EP type number

Governor

Governor design. : RQV300...1050PA1009

Governer no. : 0 421 813 938

Customer-spec. information Customer : KHD

: BF8L513LC Engine

: 243.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80 : (3.65...3.85) Rack travel in mm : 13.00...14.00 Firing order : 1-8-7-2-6-5-

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 18.6...18.8

100 s: (18.3...19.1)

Spread cm3 : 0.6

100 s: (1.0)

rpm : 300.0 2nd speed Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 3.0...3.6 100 s: (2.7...3.9)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 2.40...2.80 travel mm

rpm : 450 2nd speed

: 3.40...4.00 travel mm

rpm : 725 3rd speed

: 5.30...5.90 travel mm

rpm : 1100 4th speed

: 9.10...9.30 travel mm

rpm : 1175 5th speed

: 10.00...10.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1070

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 850

Del.quantity : 186.0...188.0

1000 : (183.0...191.0)

Spread cm3 : 6.00 1000 : (10.00)

RATED SPEED

1st version Control lever

position degrees: 119...127

Testing:

1st rack travel in: 12.30

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1190...1220 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 86...94

Testing:

Speed rpm Minimum rack trave: 7.50

rpm : 300 Speed

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 300...500 Speed

TORQUE CONTROL

Dimension a mm : 0.30

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 13.30...13.40

2nd speed rpm : 650

Rack travel in m: 13.50...13.70

3rd speed rpm : 805

Rack travel in m: 13.40...13.60

Aneroid/Altitude

Compensator Test

1st version Setting

Speed rom

: 500 hPa : 850 Pressure

Rack travel mm : 13.50...13.70

Measurement

1/min: 500 Speed

1st pressure hPa : -Rack travel in m: 11.80...12.00

2nd pressure hPa : 450

Rack travel in m: 13.00...13.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 850 rpm_ : 650 Speed

Del.quantity cm3/: 186.0...190.0

1000 s: (183.0...193.0)

cm3 : 8.00Spread 1000 s: (12.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 124.0...126.0 1000 s: (121.0...129.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 175.0...195.0

1000 s: (-)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 16,0 d6 : 22.01.92 Edition : 01.90 Replaces Test oil : ISO-4113

Combination no. : 0 401 849 750

Injection pump

Pump designation : PE10P110A920/5LS3164

: 0 411 819 708 EP type number

Governor

Governor design. : RQV300...1150PA549-5

: 0 421 813 844 Governer no.

Customer-spec. information Customer : KHD

: BF10L513 ECE Engine

1st version kW : 294.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test cil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-10- 9- 4- 3- 6- 5-Firing order

8-7-2

: 0-27-72-99-144-171-216-243-288-315 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 15.3...15.5

100 s: (15.0...15.8)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 300.0Rack travel in mm: 7.7...7.9 Del.quantity cm3/ : 1.2...1.7

100 s: (1.0...2.0) cm3 : 0.4Spread

100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300 : 1.00...1.40 travel mm

rpm : 450 2nd speed : 2.70...3.20 travel mm

3rd speed : 800 rpm

: 5.10...5.60 travel mm

4th speed rpm : 1200

: 8.40...8.60 travel mm

: 1320 5th speed rpm

: 9.60...10.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1190 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed Aneroid pressure h: 1200

Del.quantity : 133.0...158.0)

CO5

Spread

cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 117...125

Testing:

1st rack travel in: 12.20

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

rpm : 1300...1330 Speed

4th rack travel in: 1450

rpm : 0.00...1.00 Speed

LOW JDLE 1

Control lever

position degrees: 82...90

Testing:

rom : 100 Speed

Minimum rack trave: 9.50 rpm : 300

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

ripm : 300...500 Speed.

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm

hPa : 1200 Pressure

Rack travel mm : 13.20...13.30

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.40...11.60

2nd pressure hPa : 660 Rack travel in m: 12.75...12.85

3rd pressure hPa : 480

Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 117.0...119.0 1000 s: (114.0...122.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.20

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...165.0

•

1000 s: (131.0...169.0)

Remarks:

CO6

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SAC 10,8 a Edition : 21.02.92 Replaces : 12.91 Test oil : ISO-4113

Combination no. : 0 402 036 748

Injection pump

Pump designation : PES6P120A320/3RS3297

EP type number : 0 412 026 753

Governor

Governor design. : RQV375...1000PA1022

Governer no. : 0 421 813 981

Customer—spec. information Customer : SACM

Engine : UD18L6R3D

1st version kW : 219.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 375.0
Rack travel in mm : 4.9...5.3
Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 1045

travel mm : 8.30...8.50 2nd speed rpm : 375 travel mm : 1.70...2.10

3rd speed rpm : 750

travel mm : 5.60...6.20

4th speed rpm : 1350

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 9.90...12.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1000

Del.quantity : 209.0...211.0 1000 : (206.0...214.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 10.90 Speed rpm : 1040...1050

2nd rack travel in: 4.00 Speed rpm: 1130...1160 4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 68...76

Testina:

Speed : 100 rpm

Minimum rack trave: 6.60 Speed rpm

Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

rpm : 370...500 Speed

START CUT-OUT

1/min: 295 (315) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.90

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 390.0...420.0 1000 s: (386.0...424.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 375

Rack travel in mm : 4.90...5.30 Del.quantity cm3/: 17.0...23.0

1000 s: (14.0...26.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

APPLICATION

Tractor (tractor engines)

C08

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : RVI 9,8 a 6 : 14.02.92 Edition : 02.91 Replaces Test oil : ISO-4113 : 0 402 046 313 Combination no. Injection pump Pump designation : PES6P120A320RS419 : 0 412 026 037 EP type number Governor Governor design. : RQV275...1050PA495-8 Governer no. : 0 421 813 482 Customer-spec. information Customer : RVI : MIDS062045 Engine : 169.0 1st version kW : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 118 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 105 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 089 Outside diameter x Wall thickness : 8.00x2.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Fhasina Tolerance + - * : 0.50 (0.75) BASIC SETTING rpm : 10501st speed Rack travel in mm: 10.30...10.40 Del.quantity cm3/: 17.7...17.9 100 s: (17.4...18.2) Spread cm3 : 0.5100 s: (0.9) rpm : 275.0 2nd speed Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 2.3...2.7 100 s: (2.0...3.0) cm3 : 0.8 Spread 100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed 250 man 1.00...1.20 travel mm 450 2nd speed man 3.30...3.80 travel mm 3rd speed : 800 mgn : 5.70...6.00 travel mm : 1050 4th speed non : 7.60...7.80 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1130 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1050 Speed Aneroid pressure h: 700 . 177.5...179.5 1000 : (174.5...182.5) Del.quantity : 5.00 Spread cm3

1000 : (9.00)

per values

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

RATED SPEED

1st version Control lever

position degrees: 62...70

Testing:

1st rack travel in: 9.30

rpm : 1125...1135 Speed

2nd rack travel in: 4.00

Speed rpm : 1200...1230 4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 8...16

Testing:

Speed rpm : 200

Minimum rack trave: 6.60 rpm : 275

Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

rpm : 275...390 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom

hPa : 700 Pressure

Rack travel mm : 10.30...10.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.10...8.50

2nd pressure hPa : 360 Rack travel in m: 9.80...9.90

3rd pressure hPa : 160 Rack travel in m: 8.60...8.90

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650

Del.quantity cm3/: 179.0...185.0

1000 s: (176.0...188.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 109.5...111.5 1000 s: (106.5...114.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30 Speed rpm : 1125...1135 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 151.0...171.0 1000 s: (147.0...175.0)

LOW IDLE

Spread

Speed rpm : 275
Rack travel in mm : 5.20...5.40

Del.quantity cm3/: 23.5...27.5 1000 s: (20.5...30.5)

cm3 : 8.00

1000 s: (12.00)

Remarks:

Start-of-delivery mark 9.5° cam angle after start of delivery cyl. 1

APPLICATION

Omnibus

C10

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAN 11,9 s Test sheet Edition : 12.06.90 Replaces : ISO-4113 Test oil : 0 402 046 323 Combination no. Injection pump Pump designation : PES6P120A720LS470 : 0 412 026 046 EP type number Governor Governor design. : RQ250/1050PA767 : 0 421 801 311 Governer no. Customer-spec, information Customer : MAN Engine : D2866LUE/DSB 1st version kW : 250.0 : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Openina : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness : 6.00x1.50x1000 x Length mm

X Length mm : 6.00X1.50X1000
 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ______

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3 Phasing : 0-60-120-180-240-300 : 0.50 (0.75) Tolerance + - ° Time to cyl. no. : 6 BASIC SETTING rpm: 1050 1st speed Rack travel in mm : 10.50...10.60 Del.quantity cm3/: 19.8...20.0 100 s: (19.5...20.3) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 250
Rack travel in mm : 5.2...5.4
Del.quantity cm3/ : 1.2...1.8 100 s: (0.9...2.1) cm3 : 0.8Spread 100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -2 Speed rpm : 600 Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 1000
Del.quantity : 198.0...200.0
1000 : (195.0...203.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point: Speed rpm : 600 Rack travel in mm : 20.0

Testing: 1st rack travel in: 9.50

rpm : 1145...1160 Speed 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 250 Speed Rack travel in mm: 5.3 Testing: Speed rpm : 100 Minimum rack trave: 6.80 rpm : 300 Rack travel in mm : 5.20...5.40 Rack travel in mm : 2.00 Speed rom : 315...355 TORQUE CONTROL Dimension a mm : 0.55 Torque control curve – 1st version 1st speed rpm : 1050 Rack travel in m: 10.50...10.60 750 : 750 2nd speed Rack travel in m: 12.00...12.10 3rd speed rpm : 865 Rack travel in m: 11.60...11.80 4th speed rpm : 985 Rack travel in m: 9.80...10.10 START CUT-OUT 1/min: 190 (210) Speed BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.60 rpm : 1145...1160 Speed STARTING FUEL DELIVERY Speed man : 100 Del.quantity cm3/: 225.0...245.0 1000 s: (221.0...249.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 12.0...18.0 1000 s: (9.0...21.0) Spread cm3 : 8.001000 s: (12.00)

Remarks:

APPLICATION

Rail car

C12

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 d 5 Edition : 21.02.92 : 04.90 Replaces

Test oil : ISO-4113

: 0 402 046 328 Combination no.

Injection pump

Pump designation : PES6P120A320RS419-2

: 0 412 026 048 EF type number

Governor

Governor design. : RQ275/950PA753-1

Governer no. : 0 421 801 377

Customer-spec, information

Customer : RVI

Engine : MIDS/PS062045 FC

1st version kW : 144.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

irilet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order

: 1-5- 3- 6- 2- 4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm : 500 1st speed

Rack travel in mm : 8.70...8.80

Del.quantity cm3/: 12.0...12.2

100 s: (11.7...12.5)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 4.8...5.2 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -2

rpm : 525 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 500 Speed

Aneroid pressure h: 700

: 120.0...122.0 Del.quantity 1000 : (117.0...125.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Rack travel in mm : 20.0

Testina:

1st rack travel in: 7.20

rpm : 1015...1030 Speed

2nd rack travel in: 4.00

rpm : 1050...1080 Speed

4th rack travel in: 1300

rom : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rom : 250 Rack travel in mm: 4.4

Testing:

Speed r pm : 200 Minimum rack trave: 6.00 : 250 man

Rack travel in mm : 4.20...4.40

Rack travel in mm: 2.00

: 330...370 Speed MCT

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve – 1st version

1st speed

st speed rpm : 500 Rack travel in m: 8.70...8.80

rpm : 950 2nd speed

Rack travel in m: 8.00...8.20

3nd speed npm : 750

Rack travel in m: 8.30...8.50

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom hPa : 700 Pressure

: 3.70...8.89 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.00...8.20

2nd pressure hPa : 240

Rack travel in m: 8.40...8.50

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 950 Del.quantity cm3/: 140.0...144.0 1000 s: (137.0...147.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/ : 107.0...109.0

1000 s: (104.0...112.0)

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

LOW IDLE

: 250 rpm

Rack travel in mm : 4.10...4.50

Remarks:

Start-of-delivery mark 9.5° cam angle after start of delivery cyl. 1

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.80...2.90 : (2.75...2.95) Prestroke mm Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Test sheet : RVI 8,8 d 6 : 21.02.92 Edition Replaces : 03.90 Test oil : ISO-4113 Phasina : 0-60-120-180-240-300 Combination no. : 0 402 046 329 Tolerance + - * : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6P120A320RS419-2 EP type number : 0 412 026 048 1st speed rpm: 500 Governor Governor design: RQ275/950PA843 Rack travel in mm : 8.00...8.10 : 0 421 801 378 Governer no. Del.quantity cm3/: 10.6...10.8 Customer-spec. information Customer : RVI 100 s: (10.3...11.1) Engine : MIDS/PS062045D/A Spread cm3 : 0.51st version kW : 129.0 100 s: (0.9) : 1900 Rated speed 2nd speed rpm : 275.0
Rack travel in mm : 3.1...3.3
Del.quantity cm3/: 1.7...2.3 TEST BENCH REQUIREMENTS Test oil 100 s: (1.4...2.6) inlet temp. °C : 38...42 Spread cm3 : 0.8100 s: (1.2) Overflow valve : 1 419 992 198 GUIDE SLEEVE POSITION Control-lever position Inlet press., bar: 1.50 Degree: -2 Speed rpm : 525 Test nozzle holder Rack travel in mm : 19.20...20.80 assembly : 1 688 901 019 FULL LOAD DELIV. AT FULL LOAD STOP Opening : 207...210 pressure, bar 1st version rpm : 500 : 106.0...108.0 Speed Orifice plate Del.quantity diameter mm : 0.8 1000 : (103.0...111.0) : 5.00 Spread cm3 1000 : (9.00) Test lines : 1 680 750 089 RATED SPEED Outside diameter x Wall thickness 1st version x Length mm : 8,00x2,50x1000 Setting point: (A) Injection pump setting values speed rpm : 525 Rack travel in mm : 20.0 Insp. values in parentheses Set equal delivery quant. per values Testing: 1st rack travel in: 6.50 BEGINNING OF DELIVERY rpm : 1005...1020 Speed

2nd rack travel in: 4.00

rpm : 1030...1060

Speed

Test pressure, bar: 25...27

rpm : 0.00...1.00 Speed : 300...340 Speed rom TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 500 Rack travel in m: 8.00...8.10 Rack travel in m: 7.30...7.40 od speed rpm : 775 3rd speed Rack travel in m: 7.60...7.80 START CUT-OUT 1/min: 210 (230) Speed FUEL DELIVERY CHARACTERISTICS 1st version rpm : 950 Speed Del.quantity cm3/: 125.0...129.0 1000 s: (122.0...132.0) STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 145.0...165.0 1000 s: (141.0...169.0) LOW IDLE

4th rack travel in: 1300 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 275 Rack travel in mm : 3.2 Testing: Speed rpm : 200 Minimum rack trave: 5.20 Speed rpm : 275 Rack travel in mm : 3.10...3.30 Rack travel in mm : 2.00 2nd speed rpm : 950 Speed rpm : 275
Rack travel in mm : 3.10...3.30 Remarks: Start-of-delivery mark 9.5° cam angle after start of delivery cyl. 1

Omnibus

APPLICATION

: 3.50...3.60 : (3.45...3.65) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : RVI 9,8 m : 31.01.92 : 04.91 Edition Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 046 344 Tolerance + - * : 0.50 (0.75) BASIC SETTING Injection pump Pump designation : PES6P120A320RS3277 EP type number : 0 412 026 747 1st speed rpm : 650 Gwernor : RQV275...1050PA995 Governor design. Rack travel in mm : 9.80...9.90 : 0 421 813 929 Governer no. Del.guantity cm3/: 18.4...18.6 Customer-spec. information 100 s: (18.1...18.9) Customer : RVT Engine : MIDR 06 20 45 cm3 : 0.5Spread : 222.0 100 s: (0.9) 1st version kw : 2100 Rated speed rom : 275.0 2nd speed Rack travel in mm : 5.5...5.9 Del.quantity cm3/ : 2.1...2.7 TEST BENCH REQUIREMENTS 100 s: (1.8...3.0) Test oil cm3 : 0.8 inlet temp. °C : 38...42 Spread 100 s: (1.2) Overflow valve : 1 417 413 025 (B) Setting of injection pump with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL rpm : 1130 : 8.20...8.40 Test nozzle holder 1st speed assembly : 1 688 901 105 travel mm : 275 2nd speed rpm : 0.70...1.10 Openina travel mm : 207...210 : 500 pressure, bar 3rd speed rpm 3.50...4.10 750 travel ma Orifice plate 4th speed rpm 5.30...5.70 diameter mm : 0,8 travel mm : 1450 5th speed rpm : 11.00...12.00 travel mm : 1 680 750 989 Test Lines GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 rpm : 1125 : 8.00x2,50x600 x Length mm Rack travel in mm : 15.20...17.80 (A) Injection pump setting values FULL LOAD DELIV. AT FULL LOAD STOP Insp. values in parentheses Set equal delivery quant. 1st version per values Speed rpm : 650

Aneroid pressure h: 1000

Del.quantity

: 184.0...186.0

1000 : (181.0...189.0)

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 296...304

Testina:

1st rack travel in: 8.80

Speed rom : 1135...1145

2nd rack travel in: 4.00

Speed rpm : 1205...1235 4th rack travel in: 1350

rom : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 244...252

Testing:

: 200 Speed COM Minimum rack trave: 7.40 : 275 rpm

Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

rpm : 310...430 Speed

Anergid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm hPa : 1000 Pressure

: 9.80...9.90 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 7.80...8.00

2nd pressure hPa : 360
Rack travel in m: 9.20...9.30
3rd pressure hPa : 200

Rack travel in m: 8.30...8.50

START CUT-OUT

Speed 1/min: 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm : 1050 Speed

Del.quantity cm3/: 172.0...178.0 1000 s: (169.0...181.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 109.0...111.0 1000 s: (106.0...114.0)

EREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.80

rpm : 1135...1145 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 125.0...155.0 1000 s: (121.0...159.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.50...5.90
Del.quantity cm3/ : 21.0...27.0
1000 s: (18.0...30.0)

cm3 : 8.00Spread

1000 s: (12.00)

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Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB Edition : 21.02.92 Replaces : ISO-4113 Test oil Combination no. : 0 402 046 725A Injection pump : PES6P120A820LS3077 Pump designation -10: D 412 026 714 EP type number Governor Governor design. : RQ300/1100PA606-2 : 0 421 801 249 Governer no. Customer-spec. information Customer : MERCEDES-BENZ Engine : 0M407A TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 1 688 901 019 assembly **Opening** pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness : 6.00x1.50x1000 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

: 4.00...4.10 Prestroke mm : (3.95...4.15) Rack travel in mm : 9.00...12.00 : 6-2-4-1-5-3 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 6 BASIC SETTING rpm: 1100 1st speed Rack travel in mm: 10.50...10.60 Del.quantity cm3/: 15.3...15.5 100 s: (15.0...15.8) cm3 : 0.5Spread 100 s: (0.9) 2nd speed rpm : 300.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 1.4...2.0 100 s: (1.1...2.3) cm3 : 0.8Spread 100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 650 Speed Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1100 Aneroid pressure h: 700 Del.quantity : 153.0...155.0 1000 : (150.0...158.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Setting point: : 650 Speed rom Rack travel in mm: 20.0

Testing:

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

1st rack travel in: 9.50 rpm : 1145...1160 Speed 2nd rack travel in: 4.00 rpm : 1190...1220 Speed 4th rack travel in: 1300 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.1 Testing: Speed rpm : 100 Minimum rack trave: 6.50 : 300 rpm Rack travel in mm : 5.00...5.20 Rack travel in mm : 2.00 Speed rpm : 380...420 Ameroid/Aititude Compensator Test 1st version Setting : 500 Speed rpm hPa : -Pressure Rack travel mm : 10.40...10.60 Measurement Speed $1/\min : 500$ 1st pressure hPa : 280 Rack travel in m: 10.50 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 : 600 Speed rpm Del.quantity cm3/: 141.0...144.0 1000 s: (8175.5...184.5 cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 144.0...146.0

cm3 : 8.00 1000 s: (12.0)

1000 s: (141.0...149.0)

1st version 1mm rack travel less than full load rack tr: 9.50 rpm : 1145...1160 STARTING FUEL DELIVERY Speed : 100 rpa Del.quantity cm3/: 150.0...170.0 **1000 s: (146.0...174.0)** Remarks:

Spread

Note remarks

Test sheet : RVI 12,0 f1 : 14.02.92 Edition Replaces : 06.91

Test oil : ISO-4113

Combination no. : 0 402 046 758

Injection pump

Pump designation : PES6P120A320RS3139

EP type number : 0 412 026 718

Governor

Governor design. : RQV275...950PA728-1

: D 421 813 465 Governer no.

Customer-spec. information Customer : RVI

: MIDR 063540 Engine

1st version kW : 243.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 19.7...19.9

100 s: (19.4...20.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed Rack travel in mm : 6.9...7.3 Del.quantity cm3/ : 2.2...2.6

i00 s: (1.9...2.9)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 275 1st speed

1.30...1.70 travel mm

2nd speed 450 rpm

3.30...3.70 travel mm : 800 3rd speed man

5.60...6.00 travel mm

rpm : 950 4th speed

: 6.70...6.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 600 Speed

Aneroid pressure h: 1000

: 197.0...199.0 Del.quantity 1000 : (194.0...202.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 59...67

Testing:

1st rack travel in: 11.50

rpm : 1020...1030 Speed

2nd rack travel in: 4.00

Speed rpm : 1155...1185

4th rack travel in: 1250

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 8...16

Testina:

: 200 Speed rpm . Minimum rack trave: 7.10 Speed : 275 rpm

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

rpm : 300...400 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rom hPa : 1000 Pressure

Rack travel mm : 12.50...12.60

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.10...9.50

2nd pressure hPa : 520
Rack travel in m: 11.80...11.90
3rd pressure hPa : 200
Rack travel in m: 10.10...10.40

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

rpm : 950

Del.quantity cm3/: 198.0...204.0

1000 s: (195.0...207.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/: 118.0...120.0 1000 s: (115.0...123.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1020...1030

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 155.0...185.0 1000 s: (151.0...189.0)

LOW IDLE

rpm : 275 Speed

Rack travel in mm : 5.20...5.60 Del.quantity cm3/ : 22.0...26.0 1000 s: (19.0...29.0)

Spread cm3 : 8.001000 s: (12.00)

Remarks:

Start-of-delivery mark 9° cam angle

after start of delivery cyl. 1.

: 3.50...3.60 : (3.45...3.65) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : RVI 9,8 e Edition : 14.02.92 Replaces : 04.91 : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing Combination no. : 0 402 046 784 Tolerance + - ° : 0.50 (0.75) BASIC SETTING Injection pump Pump designation : PES6P120A320RS3139 EP type number : 0 412 026 718 1st speed rpm: 1000 Governor Governor design. : RQV275...1000PA728-2 Governer no. : 0 421 813 599 Rack travel in mm : 11.20...11.30 Del.quantity cm3/: 20.7...20.9 Customer-spec. information 100 s: (20.4...21.2) Customer : RVI cm3 : 0.5: MIDR 062045 E Engine Spread 100 s: (0.9) 1st version kW : 236.0 : 2000 Rated speed rpm : 275 2nd speed Rack travel in mm: 5.2...5.6 TEST BENCH REQUIREMENTS Del.quantity cm3/: 2.5...2.9 Test oil 100 s: (2.2...3.2) cm3 : 0.8 inlet temp. °C : 38...42 Spread 100 s: (1.2) Overflow valve : 1 419 992 198 (B) Setting of injection pump with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL Test nozzle holder 1st speed 250 rom : : 1 688 901 105 : 0.90...1.10 assembly travel mm rpm : 450 2nd speed : 3.30...3.70 **Opening** travel mm rpm : 800 : 207...210 pressure, bar 3rd speed : 5.60...6.00 travel mm rpm : 1000 Orifice plate 4th speed : 7.00...7.20 diameter mm : 0,8 travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 089 Control-lever position Degree: -1 rpm : 1170 Outside diameter Speed x Wall thickness Rack travel in mm : 15.20...17.80 : 8.00x2.50x600 x Length mm FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Speed rpm : 1000 Aneroid pressure h: 1000 per values : 207.0...209.0 Del.quantity 1000 : (204.0...212.0) BEGINNING OF DELIVERY

: 5.00

: (9.00)

cm3

1000

Spread

Test pressure, bar: 25...27

RATED SPEED

1st version Control Lever

position degrees: 115...123

Testina:

1st rack travel in: 10.20 Speed rpm : 1065...1075

2nd rack travel in: 4.00

rpm : 1180...1210 Speed

4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 64...72

Testing:

Speed mar

Minimum rack trave: 7.20 Speed rpm : 275

Rack travel in mm : 5.30...5.70

CONSTANT REGULATION

rpm : 230...320 Speed

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rpm hPa : 1000 Pressure

: 11.20...11.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.00...8.40

2nd pressure hPa : 320

Rack travel in m: 10.50...10.60

3rd pressure hPa : 160

Rack travel in m: 9.10...9.30

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 600 Del.quantity cm3/: 219.0...225.0

1000 s: (216.0...228.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 112.0...114.0

1000 s: (109.0...117.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

rpm : 1065...1075 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 161.0...181.0

1000 s: (157.0...185.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.20...5.60
Del.quantity cm3/ : 25.5...29.5
1000 s: (22.5...32.5)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Start-of-delivery mark 9° cam angle after start of delivery cyl. 1.

: 3.50...3.60 : (3.45...3.65) Prestroke mm BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-8-2-4 Firing order Test sheet : RVI 12,0 i : 28.02.92 Edition Replaces : 08.91 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Tolerance + - ° Combination no. : 0 402 046 819 : 0.50 (0.75) BASIC SETTING Injection pump Pump designation : PES6P120A320RS3269 1st speed rpm: 600 EP type number : 0 412 026 743 Governor Rack travel in mm : 13.00...13.10 Governor design. : RQV275...1000PA983 : 0 421 813 903 Coverner no. Del.quantity cm3/: 26.8...27.0 Customer-spec. information 100 s: (26.5...27.3) Customer : RVI Spread cm3 : 0.5: MIDR 06 35 40 L Engine 100 s: (0.9) : 283.0 1st version kW : 2000 Rated speed 2nd speed rpm : 275.0 Rack travel in mm : 7.2...7.6 TEST BENCH REQUIREMENTS Del.quantity cm3/ : 2.4...2.8 100 s: (2.1...3.1) Test oil inlet temp. °C : 38...42 Spread cm3 : 0.8100 s: (1.2) Overflow valve (B) Setting of injection pump : 1 417 413 025 with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL rpm : 1070 Test nozzle holder 1st speed : 1 688 901 105 : 7.70...7.90 travel mm assembly : 275 2nd speed mon : 0.70...1.10 travel mm Openina: : 500 3rd speed : 207...210 rpm pressure, bar : 3.50...4.10 travel mm : 750 Orifice plate 4th speed riom : 5.30...5.70 diameter mm travel mm : 0.8 1450 5th speed rpm : 11.00...12.00 travel mm Test lines : 1 680 750 015 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 rpm : 1125 : 6.00x1.50x600 x Length mm Speed Rack travel in mm : 15.20...17.80 (A) Injection pump setting values Insp. values in parentheses FULL LOAD DELIV. AT FULL LOAD STOP Set equal delivery quant. 1st version per values rpm : 600 Speed

Aneroid pressure h: 1000

Del.quantity : 200.0...273.0)

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 296...304

Testing:

1st rack travel in: 12.10

Speed rpm : 1065...1075

2nd rack travel in: 4.00

rpm : 1190...1220 Speed

4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 247...255

Testina:

Speed rpm : 200 Minimum rack trave: 7.60 : 275 rom

Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

rpm : 310...420 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 man Pressure hPa : 1000

Rack travel mm : 13.10...13.20

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.20

2nd pressure hPa : 440

Rack travel in m: 12.50...12.70 3rd pressure hPa : 200

Rack travel in m: 10.40...10.80

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm : 1000 Speed

Del.quantity cm3/: 241.0...247.0 1000 s: (238.0...250.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 154.0...156.0

1000 s: (151.0...159.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10

rpm : 1065...1075 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 150.0...180.0 1000 s: (145.0...184.0)

LOW IDLE

Speed rpm

Rack travel in mm : 5.50...5.90 Del.quantity cm3/ : 24.0...28.0 1000 s: (21.0...31.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

: RVI Test sheet

; 28.02.92 Edition

Replaces : ISO-4113 Test oil

Combination no. : 0 402 046 835

Injection pump

Pump designation : PES6P120A320RS3139

EP type number : 0 412 026 718

Governor

Governor design. : RQ750PA1026 Governer no. : 0 421 801 637

Customer-spec, information Customer : RVI

: MIDR 062045 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 25.5...25.7

100 s: (25.2...26.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed

Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 1.5...2.1

100 s: (1.2...2.4)

cm3 : 0.8 Spread 100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed mari : 700

255.0...257.0 1000 : (252.0...260.0) Del.quantity

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 12.20 rpm : 750...755 2nd rack travel in: 4.00

rpm : 787...800 Speed

4th rack travel in: 900 rpm : 0.00...1.00Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.20 rpm : 750...755 Speed

Remarks:

APPLICATION

Generator set

Note remarks

Test sheet : FIN : 05.07.91 Fdition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 070 700

Injection pump

Pump designation : PES12P110A920LS3274

EP type number : 0 412 010 700

Governor

Governor design. : RSUV300...1100P0A360

Governer no. : 0 421 829 109

Customer-spec. information

Customer : FINCANTIERI

Engine : 12130 IS

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

: 1- 4- 9- 8- 5- 2-Firing order

11- 10- 3- 6- 7- 12

: 0-15-60-75-120-135-180-195-240-255-300-Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 13.30...13.40

Del.auantity cm3/: 16.8...17.1

100 s: (16.5...17.3)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm : 7.1...7.5

Del.quantity cm3/: 1.6...2.1

100 s: (1.3...2.3)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

: 168.0...171.0 Del.quantity 1000 : (165.5...173.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version Control Lever

position degrees: 56...64

Testing:

1st rack travel in: 12.30 Speed rpm : 1140...1150 2nd rack travel in: 4.00

rpm : 1175...1205

4th rack travel in: 1350

Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 14...22
Setting point w/out bumper spring
Speed rpm : 300

Rack travel in mm: 7.3
Speed rpm: 300
Rack travel in mm: 7.20...7.40
Rack travel in mm: 2.60
Speed rpm: 330...370

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 13.30...13.40
2nd speed rpm : 500
Rack travel in m: 13.30...13.50

3rd speed rpm : 350 Rack travel in m: 14.50...15.10

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.30 Speed rpm : 1140...1150

LOW IDLE

Remarks:

Note remarks

: IHC 13,4 h Test sheet : 28.02.92 Edition : 23.08.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 076 704

Injection pump

Pump designation : PES6P110A420LS3008

Governor

Governor design. : RSV350...1050P0/386D

Customer-spec. information

Customer

: DTI-817C Enaine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Inlet press., bar: 2.8

Test nozzle holder

: 1 688 901 003 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.7

Test lines : 9 681 230 713

Outside diameter x Wall thickness

: 6,00x2,00x1016 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

: 2,00...2,10 : (1,95...2,15) Prestroke mm

Rack travel in mm : 9,00...12,00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ}$: 0,50 (0,75)

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm: 9,00

Del.quantity cm3/: 10,4...11,8

100 s: (-)

2nd speed rpm : 1000

Rack travel in mm : 12,00
Pel.quantity cm3/ : 17,6...18,6
100 s: (-)

3rd speed rom : 600 Rack travel in mm: 6,00 Del.quantity cm3/: 3,4...4,4 100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 800

Del.quantity : 196,0...202,0 1000 : (-)

RATED SPEED

1st version Control Lever

position degrees: 39...47

Testing:

1st rack travel in: 12,30

rpm : 1090...1110 Speed

2nd rack travel in: 8,00

rpm : 1135...1165 Speed

3rd rack travel in: 1,30...6,40 Speed rpm : 1190 4th rack travel in: 1240

rpm : 1,30...2,00 Speed

LOW IDLE 1 Control lever

position degrees: 17...25 Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 5,50

Testing:

Speed rpm : 100 Minimum rack trave: 20,00

Speed rpm: 350
Rack travel in mm: 5,40...5,60
Rack travel in mm: 1,65
Speed rpm: 390..410

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1030 Rack travel in m: 9,00 2nd speed rpm : 750

Rack travel in m: 9,70...9,90

3rd speed rpm : 450

Rack travel in m: 9,70...9,90

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 132 Pressure Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 488 Rack travel in m: **

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800 Speed rpm : 750 Del.quantity cm3/: 230,0...240,0

1000 s: (-)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 158,5...159,5 1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11,00

rpm : 1085...1095 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 225,0...295,0 1000 s: (-)

HIGH IDLE

1st version

rpm : 1145 Speed

Rack travel in mm : 4,70...5,70

LOW IDLE

Speed rpm : 350 Del.quantity cm3/ : 24,0...34,0 1000 s: (-)

Remarks:

* Start of LDA (manifold-pressure

compensator) movement

** Ende der LDA-Bewegung

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.55...3.65 : (3.50...3.70) Prestroke mm Note remarks Rack travel in mm: 10.50 : DEE 7,6 y 2 : 1-5-3-6-2-4 Firing order Test sheet : 14.02.92 Edition : 11.91 Replaces Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing : 0 402 076 742 Combination no. : 0.50 (0.75) Tolerance + - ° Injection pump Pump designation : PES6P120A720RS3203 Time to cyl. no. : 1 EP type number : 0 412 026 728 BASIC SETTING Governor : RSV400...1050P2A534-Governor design. 1st speed rpm: 1050 : 0 421 833 356 Governer no. Rack travel in mm : 12.20...12.30 Customer—spec. information Del.quantity cm3/: 15.5...15.7 : JOHN DEERE Customer 100 s: (15.3...15.9) : 6076 HZ030 Engine : 193.0 1st version kW Spread cm3 : 0.5Rated speed : 2100 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 400.0 2nd speed Rack travel in mm: 6.7...6.9 Test oil Del.quantity cm3/: 3.9...4.3 inlet temp. °C : 38...42 100 s: (3.6...4.5) cm3 : 0.8 Overflow valve Spread : 1 457 413 010 100 s: (1.2) GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Test nozzle holder Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 : 1 688 901 101 assembly Opening : 207...210 pressure, bar Click setting x : 5.00 Orifice plate diameter mm : 0,6 1st version : 1 680 750 015 Test lines rpm : 1050Speed Aneroid pressure h: 900 Outside diameter

Governor spring pre-tension FULL LOAD DELIV. AT FULL LOAD STOP Del.quantity : 155.5...159.5) x Wall thickness : 5.00 : 6.00x3.00x600 x Length mm Spread cm3 : (9.00) 1000 (A) Injection pump setting values Insp. values in parentheses RATED SPEED Set equal delivery quant. per values 1st version Control Lever BEGINNING OF DELIVERY position degrees: 41...49 Test pressure, bar: 27...29

Testing:

1st rack travel in: 11.20

rpm : 1095...1105 Speed

2nd rack travel in: 4.00

rpm : 1155...1165

3rd rack travel in: 4.00

Speed rpm : 1150...1180 4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 16...24

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 6.3

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400 Speed

Rack travel in mm : 6.70...6.90

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 12.20...12.30 2nd speed rpm : 700

Rack travel in m: 13.60...13.80

Aneroid/Altitude Compensator Test

1st version Settina

Speed : 500 rpm

hPa : 900 Pressure

: 13.60...13.80 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.70...10.90 2nd pressure hPa : 390 Rack travel in m: 11.40...11.50

3rd pressure hPa : 605

Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm : 700 Speed

Del.quantity cm3/: 190.0...194.0 1000 s: (188.0...196.0)

Aneroid pressure h: -

Speed rpm : 800 Del.quantity cm3/: 116.5...120.5 1000 s: (114.5...122.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

rpm : 1095...1105 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 90.0...110.0

1000 s: (85.0...115.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400 Rack travel in mm : 6.70...6.90 Del.quantity cm3/: 39.0...43.0 1000 s: (36.5...45.5)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: JOHN DEERE # RE47549

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : DEE 7,6 y 3 : 14.02.92 Edition Replaces : 12.91 Test oil : ISO-4113

Combination no. : 0 402 076 743

Injection pump

Pump designation : PES6P120A720RS3203 : 0 412 026 728 EP type number

Governor

: RSV425...1100P2A534-Governor design.

: 0 421 833 370 Governer no.

Customer-spec. information Customer : JOHN DEERE

: 6076 AN 030 Engine

: 187.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x3.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.55...3.65 Prestroke mm

: (3.50...3.70)

Rack travel in mm: 10.50

: 1-5- 3- 6- 2- 4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 1100 1st speed

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 15.0...15.2

100 s: (14.7...15.4)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 425.0 2nd speed

Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 2.5...3.0

100 s: (2.2...3.1)

cm3 : 0.6

Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 1200

Del.quantity

: 150.0...152.0 1000 : (147.5...154.5)

: 4.00 Spread cm3

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testina: 1st rack travel in: 10.80 rpm : 1150...1160 Speed 2nd rack travel in: 4.00 Speed rpm : 1220...1230 3rd rack travel in: 4.00 rpm : 1210...1240 Speed 4th rack travel in: 1350 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring rpm : 425 Rack travel in mm: 5.1 Testing: : 100 Speed rpm Minimum rack trave: 19.00 rpm : 425 Rack travel in mm : 5.50...5.70 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 11.80...11.90 2nd speed rpm : 700 Rack travel in m: 12.80...13.00 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 1200 Pressure : 12.80...13.00 Rack travel mm Measurement Speed 1/min: 500 1st pressure hPa : -

Rack travel in m: 10.70...10.90
2nd pressure hPa : 720
Rack travel in m: 11.00...11.10
3rd pressure hPa : 895 Rack travel in m: 11.90...12.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200

rpm : 700 Speed Del.quantity cm3/: 173.5...178.5 1000 s: (171.0...181.0)

Aneroid pressure h: -Speed rpm : 800 Del.quantity cm3/: 120.0...124.0 1000 s: (117.0...127.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.80 rpm : 1150...1160 Speed

STARTING FUEL DELIVERY

rpm : 100 Del.quantity cm3/: 90.0...110.0 1000 s: (85.0...115.0) Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 25.0...30.0
1000 s: (22.5...31.5) cm3 : 6.00 Spread 1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47394

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : BA0

: 28.02.92 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 630 807

Injection pump

Pump designation : PE12P120A120RS7253

: D 412 620 831 EP type number

Governor

: RQV350...900PA935-1 Governor design.

Governer no. : 0 421 813 820

Customer-spec, information Customer : BAUDOUIN

: 12 P 15-2 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

: 1- 12- 9- 4- 5- 8-11- 2- 3- 10- 7- 6 Firing order

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 900

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 33.9...34.1

100 s: (33.6...34.4)

cin 3 : 0.5Spread

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm: 4.6...5.0 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

travel mm : 1.40...1.60

rpm : 500 2nd speed

: 3.10...3.70 : 740 travel mm

3rd speed rpm

: 5.70...6.30 travel mm

: 960 4th speed rpm

: 8.60...8.80 travel mm

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -1 rpm : 1010 Speed

Rack travel in mm : 9.70...12.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

: 339.0...341.0 Del.quantity

1000 : (336.0...344.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 118...126

Testina:

1st rack travel in: 11.00 Speed rpm : 940...950 2nd rack travel in: 4.00

Speed rpm : 1010...1040 4th rack travel in: 1150

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 86...94

Testing:

: 100 Speed rpm Minimum rack trave: 6.30 Speed rpm : 350

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

rpm : 330...450 Speed

START CUT-OUT

1/min: 270 (290) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00 rpm : 940...950 Speed

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

:

APPLICATION

Navy

Note remarks

: MB 21,9 u Test sheet Edition : 20.12.91 Reptaces : 69.86 : ISO-4113 Test oil

: 0 402 640 801 Combination no.

Injection pump

Pump designation : PE12P120A320LS7805 EP type number : 0 412 620 802

Governor

Governor design. : RQV350...1050PA781 : 0 421 813 511

Governer no.

Customer-spec. information

Customer

: DAIMLER-BENZ

Engine : OM 444 LA

1st version kW : 463.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...160

Test nozzle holder

: 1 688 901 019 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 9.00...12.00

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Firing order

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 12

BASIC SETTING

rpm: 1030 1st speed

Rack travel in mm : 14.40...14.50

Del.quantity cm3/: 21.4...21.6

100 s: (21.1...21.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.02nd speed Rack travel in mm: 5.4...5.6 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed 350 rpm : 1.90...2.40 travel mm

: 449 2nd speed rpm : 3.00...3.50 travel mm

3rd speed : 760 rpm

: 4.50...5.00 travel mm 4th speed : 1107 rpm

: 7.50...8.00 travel mm : 1410

5th speed rom : 10.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1180 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030 Aneroid pressure h: 700

: 214.0...216.0 Del.quantity 1000 : (211.0...219.0)

Spread

cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 115...123

Testing:

1st rack travel in: 13.40

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1225...1255 4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 65...73

Testing:

Speed : 100 man Minimum rack trave: 6.10 rpm : 350 Speed

Rack travel in mm : 4.40...4.60

CONSTANT REGULATION

: 400...600 Speed riom .

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed riom Pressure hPa : -

: 11.80...12.00 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : 335 Rack travel in m: 12.40...12.60 2nd pressure hPa : 485

Rack travel in m: 13.60...13.80

START CUT-OUT

Speed 1/min: 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

rpm : 600

Del.quantity cm3/: 208.0...214.0 1000 s: (205.0...217.0)

cm3 : 8.00

Spread 1000 s: (12.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 153.0...155.0 1000 s: (150.0...158.0)

Spread

cm3 : 8.001000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 210.0...230.0

1000 s: (206.0...234.0)

Remarks:

APPLICATION

Rail car

D12

Note remarks

Test sheet : MB

: 21.02.92 Edition

Replaces : ISO-4113 Test oil

Combination no. : 0 402 640 837

Injection pump

Pump designation : PE12P120A320LS7807

: 0 412 620 806 EP type number

Governor

Governor design. : RQ400/1065PA1024 : 0 421 801 634 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 444 LA Engine

: 485.0 1st version kW : 2130 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00

: 12-1-5-7-8-3-Firing order

4-11-10-2-6-7

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 1065

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 21.1...21.3

100 s: (20.8...21.6)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 400.0 2nd speed

Rack travel in mm : 5.2...5.8 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.8

Spread 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1065 Speed

Aneroid pressure h: 1000

Del.quantity : 211.0...213.0 1000 : (208.0...216.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rom : 600 Rack travel in mm: 20.0 Testing: 1st rack travel in: 12.90 Speed rpm : 1110...1125 2nd rack travel in: 4.00 rpm : 1210...1240 Speed 4th rack travel in: 1300 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/our bumper spring rpm : 400 Rack travel in mm: 5.5 Testing: Speed rpm : 300Minimum rack trave: 7.30 rpm : 400 Speed Rack travel in mm : 5.20...5.80 Rack travel in mm : 2.00 : 460...500 Speed mon Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed man hPa : -Pressure : 10.90...11.20 Rack travel mm Measurement 1/min : 600 Speed 1st pressure hPa : 350 Rack travel in m: 11.60...11.80 2nd pressure hPa : 500 Rack travel in m: 12.60...12.80 START CUT-OUT 1/min : 320 (300)Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 600 Del.quantity cm3/: 205.0...209.0 1000 s: (202.0...212.0) cm3 : 8.00Spread

1000 s: (12.0)

Speed rpm : 500 Del.quantity cm3/: 141.0...143.0 1000 s: (138.0...146.0)

Aneroid pressure h: -

cm3 : 8.00Spread 1000 s: (12.0) BREAKAWAY 1st version imm rack travel less than full load rack tr: 12.90 Speed rpm : 1110...1125 STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.9) LOW IDLE Speed rpm : 400 Rack travel in mm : 5.20...5.80 Del.quantity cm3/: 16.0...22.0 1000 s: (13.0...25.0) cm3 : 8.00Spread 1000 s: (12,00) Remarks: **APPLICATION** Rail car

Note remarks

Test sheet

: 22.01.92 Edition

Peplaces

: ISO-4113 Test oil

Combination no. : 0 402 646 838

Injection pump

Pump designation: PE6P120A320LS7808-10

: 0 412 626 850 EP type number

Governor

Governor design. : R0300/1050PA762-4

Governer no. : 0 421 801 390

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M441 LA

ist version kW : 240.0 : 2100 Rated speed

TEST BENCH REQUIPEMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35) Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no.

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.90...14.10

Del.quantity cm3/: 21.4...21.6

100 s: (21.1...21.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.2)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm: 600 Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed

Aneroid pressure h: 900 Del.quantity : 214.0...216.0 1000 : (211.0...219.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed Rack travel in mm : 20.0 Testing: 1st rack travel in: 13.80 Speed rpm : 1095...1110 2nd rack travel in: 4.00 rpm : 1155...1185 Speed 4th rack travel in: 1300 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.9 Testing: : 200 Speed rpm Minimum rack trave: 7.90 : 300 Speed rom Rack travel in mm : 5.60...6.20 Rack travel in mm : 2.00 rpm : 380...420 Speed TORQUE CONTROL : 0.30 Dimension a mm : 1050 2nd speed rpm Rack travel in m: 14.80...15.00 3rd speed rpm : 800 Rack travel in m: 15.00...15.20 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed mons hPa : 900 Pressure : 13.90...14.10 Rack travel mm Measurement $1/\min : 600$ Speed 1st pressure hPa : 300 Rack travel in m: 10.70...10.90 2nd pressure hPa : 550
Rack travel in m: 12.90...13.10
3rd pressure hPa : 1050 Rack travel in m: 14.00...14.10 * 4th pressure hPa : 1150 Rack travel in m: 14.40...14.70 5th pressure hPa : -Rack travel in m: 9.50...9.80 START CUT-OUT 1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1450 Speed rpm : 1050
Del.quantity cm3/ : 231.0...234.0
1000 s: (228.0...237.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1450 Speed rpm : 800 Del.quantity cm3/: 237.0...241.0 1000 s: (234.0...244.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 142.0...144.0 1000 s: (139.0...147.0) cm3 : 8.00Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.80 Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 1000 s: (196.0...224.0)

Remarks:

* Increase in control-rod traval with respect to setting at least 0.1 mm

Note remarks

Test sheet : MB 9,6 a : 21.02.92 Edition : 08.91 Replaces : ISO-4113 Test oil

: 0 402 646 915 Combination no.

Injection pump

Pump designation : PE6P12DA32DLS7836 EP type number : 0 412 626 840

Governor

Governor design. : RQ300/1050PA972 Governer no. : 0 421 801 542

Customer-spec, information

: MERCEDES-BENZ Customer

: 0M401 LA Engine

1st version kil : 200.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Crifice plate

diameter mm : 0.8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

: 8,00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm : (5.45...5.65)

Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.40...12.60

Del.quantity cm3/: 18.2...18.4

100 s: (17.9...18.7)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 5.2...5.9 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 600 Speed

Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 800

: 182.0...184.0 Del.quantity 1000 : (179.0...187.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Rack travel in mm: 20.0

Spread Testina: 1st rack travel in: 12.10 rpm : 1090...1105 2nd rack travel in: 4.00 rpm : 1165...1195 Speed 4th rack travel in: 1300 Spread rpni : 0.00...1.50 Spead LOW IDLE 1 Setting point w/out bumper spring BREAKAWAY rpm : 300 Rack travel in mm: 5.5 Testing: Speed rpm : 200 Minimum rack trave: 7.50 Speed rpm : 300 Rack travel in mm: 5.20...5.90 Rack travel in mm: 2.00 Speed rpm: 380...420 Speed Aneroid/Altitude Compensator Test 1st version Remarks: Setting : 600 Speed **MC** hPa : 800 Pressure : 12.40...12.60 Rack travel mm Measurement Speed $1/\min: 600$ 1st pressure hPa : 300 Rack travel in m: 10.50...10.70 2nd pressure hPa : 500 Rack travel in m: 11.60...11.80 3rd pressure hPa : 1000 Rack travel in m: 12.60...12.80 4th pressure hPa : 1150 Rack travel in m: 12.90...13.10 5th pressure hPa : -Rack travel in m: 10.20...10.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 Speed rpm : 1050 Del.quantity cm3/ : 201.0...204.0 1000 s: (198.0...207.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1400 rpm : 800 Del.quantity cm3/: 202.0...206.0 1000 s: (199.0...209.0)

Spread cm3: 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) Spread cm3: 8.00 1000 s: (12.0)

1st version 1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 50.0...70.0 1000 s: (46.0...74.0)

Rack travel in mm : 10.20...10.60

•

arks:

D18

Note remarks

: MB 9,6 r : 21.02.92 Test sheet **Fdition** : 07.91 Replaces Test oil : ISO-4113

: 0 402 646 916 Combination no.

Injection pump

Pump designation : PE6P120A320LS7836 : 0 412 626 854 EP type number

Governor

Governor design. : RQV300...1050PA797

-17

: 0 421 813 884 Governer no.

Customer-spec, information

: MERCEDES-BENZ Customer

: 0M401 LA Engine

: 200.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60 : (5.45...5.65)
Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 12.40...12.60

Del.quantity cm3/: 18.2...18.4

100 s: (17.9...18.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 5.3...5.9 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 3001st speed : 1.00...1.50 travel mm

rpm : 637 2nd speed

: 4.90...5.40 travel mm

rpm : 830 3rd speed

: 6.00...6.50 travel mm

rpm : 1107 4th speed

: 8.30...8.80 travel mm

: 1218 5th speed rpm

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1125 Speed

Rack travel in mm : 15.20...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

START CUT-OUT 1st version rpm : 600 1/min : 240 (260) Speed Speed Aneroid pressure h: 800 Del.quantity : 182.0...184.0 FUEL DELIVERY CHARACTERISTICS 1000 : (179.0...187.0) : 5.00 Spread cm3 : (9.00) 1000 1st version Aneroid pressure h: 1500 Speed rpm : 1050 Del.quantity cm3/: 201.0...204.0 RATED SPEED 1000 s: (198.0...207.0) 1st version cm3 : 8.00Control lever Spread 1000 s: (12.0) position degrees: 118...126 Aneroid pressure h: 1500 Speed rpm : 800 Del.quantity cm3/ : 205.0...209.0 Testina: 1st rack travel in: 12.40 1000 s: (202.0...212.0) rpm : 1090...1100 Speed cm3 : 8.002nd rack travel in: 4.00 Spread 1000 s: (12.0) rpm : 1195...1225 Speed 4th rack travel in: 1300 Speed rpm: 0.00...1.00 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) LOW IDLE 1 Control Lever Spread cm3 : 8.90position degrees: 80...88 1000 s: (12.0) Testina: : 200 Speed **BREAKAWAY** rpm Minimum rack trave: 7.60 : 300 1st version rpm Rack travel in mm : 5.40...5.90 1mm rack travel less than CONSTANT REGULATION full load rack tr: 12.40 rpm : 1090...1100 rpm : 300...500 Speed Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 1000 s: (196.0...224.0) 1st version Setting Speed : 600 rpm hPa : 800 Remarks: Rack travel mm : 12.40...12.60 : Measurement Speed 1/min: 600 1st pressure hPa : 350 Rack travel in m: 10.80...11.00 2nd pressure hPa : 500 Rack travel in m: 11.60...11.80 3rd pressure hPa : 1050 Rack travel in m: 12.60...12.80 4th pressure hPa : 1150 Rack travel in m: 12.90...13.10 5th pressure hPa : -

Rack travel in m: 10.30...10.60

Note remarks

: UNI 13,8 h Test sheet : 28.02.92 Edition : 11.91 Replaces

: ISO-4113 Test oil

Combination no. : 0 402 646 923

Injection pump

Pump designation : PE6P13OA72ORS7225

EP type number : 0 412 636 817

Governor

Governor design. : RQV300...900PA946

: 0 421 813 845 Governer no.

Customer-spec. information

Customer : IVECO-UNIC

Engine : 8210.42.061

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening.

pressure, bar : 207...210

Orifice plate

diameter min : 0.8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 11.50...12.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 12.60...12.70

Del.guantity cm3/: 27.0...27.3

100 s: (26.6...27.6)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 300.0Rack travel in mm: 4.4...4.8

Del.quantity cm3/: 1.9...2.5 100 s: (1.5...2.9)

cm3 : 1.0 Spread

100 s: (1.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL.

rpm : 945 1st speed

: 8.40...8.60 travel mm : 300 2nd speed rpm

: 1.00...1.40 travel mm

3rd speed : 500 rpm 3.30...3.90

travel mm : 700 4th speed rom

: 5.50...5.90 travel mm

: 1200 5th speed **m**cpn

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 935 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

Aneroid pressure h: 900 Del.quantity : 270.0...273.0

Del.quantity : 270.0...276.5)

cm3 : 6.00Spread 1000 : (10.00)

RATED SPEED

1st version Control Lever

position degrees: 117...125

Testing:

1st rack travel in: 11.60 rpm : 940...950 Speed 2nd rack travel in: 4.00

rpm : 1015...1045 Speed

4th rack travel in: 1200

rom : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 75...83

Testina:

Speed : 100 rpm Minimum rack trave: 6.10 rpm : 300

Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

rpm : 320...440 Speed

Aneroid/Altitude Compensator Test

1st version Settina

: 500 Speed rom hPa : 900 Pressure

Rack travel mm : 12.60...12.70

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 10.20...10.40

2nd pressure hPa : 350

Rack travel in m: 12.00...12.10

3rd pressure hPa : 300

Rack travel in m: 10.90...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 500 Del.quantity cm3/: 285.0...292.0 1000 s: (281.5...295.5)

Aneroid pressure h: -: 500 Speed mon.

Del.quantity cm3/: 202.0...205.0 1000 s: (198.5...208.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

rpm : 940...950 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 125.0...155.0 1000 s: (121.0...159.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 4.40...4.80 Del.quantity cm3/: 19.0...25.0 1000 s: (15.0...29.0)

cm3 : 10.00Spread 1000 s: (14.00)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

: MB 9,6 p : 21.02.92 Test sheet Edition : 05.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 924

Injection pump

Pump designation : PE6P120A320LS7837 EP type number : 0 412 626 842

Governor

Governor design. : RQ300/950PA971-3 : 0 421 801 557 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 250.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 23.3...23.5

100 s: (23.0...23.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 6.3...6.9 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

> Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 600

Aneroid pressure h: 1000 Del.quantity : 233.0...235.0 1000 : (230.0...238.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

rom Rack travel in mm: 20.0

Testing: 1st rack travel in: 14.50 rpm : 990...1005 Speed 2nd rack travel in: 4.00 rpm : 1080...1110 Speed 4th rack travel in: 1200 rom : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm : 6.6 Testina: : 200 Speed rpm Minimum rack trave: 8.20 : 300 Speed COM Rack travel in mm : 6.30...6.90 Rack travel in mm : 2.00 rpm : 380...420 Speed TORQUE CONTROL Dimension a mm : 0.40 : 950 2nd speed rom Rack travel in m: 15.50...15.70 : 800 3rd speed rpm Rack travel in m: 15.60...15.80 Ameroid/Altitude Compensator Test 1st version Settina : 600 Speed rom hPa : 1000 Pressure : 14.70...14.90 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 200 Rack travel in m: 9.70...9.90 2nd pressure hPa : 600 Rack travel in m: 13.50...13.70 3rd pressure hPa : 1250 Rack travel in m: 14.80...15.00 * 4th pressure hPa : 1450 Rack travel in m: 15.40...15.60 5th pressure hPa : -Rack travel in m: 9.30...9.50 FUEL DELIVERY CHARACTERISTICS 1st version

Del.quantity cm3/: 251.0...254.0 1000 s: (248.0...257.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1800 : 800 rpm Del.quantity cm3/: 250.0...254.0 1000 s: (247.0...257.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed mari Del.quantity cm3/: 135.0...137.0 1000 s: (132.0...140.0) cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.50 Speed rom : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100 Rack travel in mm : 9.30...9.50

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

Aneroid pressure h: 1800

rpm : 950

Note remarks

Test sheet : MB 11,1 b
Edition : 21.02.92
Replaces : 03.91
Test oil : ISO-4113

Combination no. : 0 402 646 925

Injection pump

Pump designation : PE6P120A320LS7837 EP type number : 0 412 626 842

Governor

Governor design. : RQV300...950PA797-20

Governer no. : 0 421 813 893

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M441 LA

1st version kW : 250.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 23.3...23.5

100 s: (23.0...23.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2 Del.quantity cm3/ : 1.6...2.2

eliquantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed rpm : 567

travel mm : 4.40...4.90

3rd speed rpm: 780

travel mm : 6.10...6.60

4th speed rpm: 1009

travel mm : 8.30...8.80

5th speed rpm : 1190

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -1

Speed rpm : 1025 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 600 Speed Aneroid pressure h: 1000 Del.quantity : 233.0...235.0 1000 : (230.0...238.0) cm3 : 5.00 Spread 1006 : (9.00) RATED SPEED 1st version Control Lever position degrees: 120...128 Testing: 1st rack travel in: 14.50 rpm : 990...1000 2nd rack travel in: 4.00 rpm : 1085...1115 Speed 4th rack travel in: 1200 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 82...90 Testing: Speed rpm : 200 Minimum rack trave: 7.70 Speed rpm : 300 Rack travel in mn : 5.60...6.20 CONSTANT REGULATION rpm : 300...450 Speed TORQUE CONTROL Dimension a mm : 0.10 2nd speed rpm : 950 Rack travel in m: 15.50...15.70 : 800 3rd speed rpm Rack travel in m: 15.60...15.80 Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed rom hPa : 1000 Pressure : 14.70...14.90 Rack travel mm Measurement 1/min: 600 Speed

Rack travel in m: 14.80...15.00 * 4th pressure hPa : 1450 Rack travel in m: 15.40...15.60 5th pressure hPa : -Rack travel in m: 9.30...9.50 START CUT-OUT 1/min: 240 (260) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1700 : 950 Speed rpm Del.quantity cm3/: 251.0...254.0 1000 s: (248.0...257.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1700 : 800 Speed rpm Del.quantity cm3/: 250.0...254.0 1000 s: (247.0...257.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 135.0...137.0 1000 s: (132.0...140.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.50 Speed rpm : 990...1000 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 250.0...270.0 1000 s: (246.0...274.0) Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

1st pressure hPa : 200

3rd pressure hPa : 1250

Rack travel in m: 9.70...9.90 2nd pressure hPa : 600 Rack travel in m: 13.50...13.70

Note remarks

: MB 9,6 0 4 Test sheet : 21.02.92 Edition : 04.91 Replaces : ISO-4113 Test oil

: 0 402 646 930 Combination no.

Injection pump

Pump designation : PE6P120A320LS7834 : 0 412 626 841 EP type number

Governor

: RQ300/1050PA972-7 Governor design.

: 0 421 801 583 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M401 LA Engine

: 230.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65) Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rom: 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.5...7.1

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed

Aneroid pressure h: 1100

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed man Rack travel in mm : 20.0

Testing: 1st rack travel in: 13.90 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring COM Rack travel in mm : 6.8 Testing: : 200 Speed rpm Minimum rack trave: 8.70 : 300 Speed rpm Rack travel in mm : 6.50...7.10 Rack travel in mm : 2.00 : 380...420 Speed rom TORQUE CONTROL : 0.35 Dimension a mm : 1050 2nd speed rpm Rack travel in m: 14.90...15.10 3rd speed : 800 rpm Rack travel in m: 15.30...15.50 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 **MON** hPa : 1100 Pressure : 14.70...14.90 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 10.90...11.10 2nd pressure hPa : 700 Rack travel in m: 13.40...13.60 3rd pressure hPa : 1400 Rack travel in m: 14.80...15.00 * 4th pressure hPa : 1550 Rack travel in m: 15.10...15.30 5th pressure hPa : Rack travel in m: 10.40...10.60 FUEL DELIVERY CHARACTERISTICS 1st version

Del.quantity cm3/: 234.0...237.0 1000 s: (231.0...240.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1800 : 800 rpm Del.quantity cm3/: 243.0...247.0 1000 s: (240.0...250.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.90 Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cn3/ : 40.0...70.0
1000 s: (36.0...74.0)
Rack travel in mm : 10.40...10.70

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

Aneroid pressure h: 1800

rpm

: 1050

Note remarks

: DAF 11.7 n : 21.02.92 Test sheet Edition : 09.91 Replaces

Test oil : ISO-4113

: 0 402 646 936 Combination no.

Injection pump

Pump designation : PE6P120A320RS7230 EP type number : 0 412 626 843

Governor

Governor design: : RQV250...1000PA99CK

: 0 421 815 274 Governer no.

Customer-spec. information

Customer : DAF

Engine : WS 315 G

TEST BENCH REQUIREMENTS

Test oil

inlet temp. "C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nazzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm: 13.80...14.80

: 1-5-3-6-2-4 Firing order

: 9-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 1

BASIC SETTING

rpm: 980 1st speed

Rack travel in mm : 14.20...14.30

Del.quantity cm3/: 26.4...26.6

100 s: (26.1...26.9)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

1.30...1.70 travel mm

2nd speed 285 rpm

: 2.10...2.50 travel mm

3rd speed rpm : 685

: 6.20...6.60 travel mm

: 1030 4th speed rpm

9.60...10.00 travel mm

1145 5th speed rpm

: 11.20...11.40 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130 Rack travel in mm : 12.90...15.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 980 Speed

Aneroid pressure h: 1500

Del.quantity : 264.0...266.0

1000 : (261.0...269.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control Lever

position degrees: 60...68

Testina:

1st rack travel in: 13.20

rpm : 1030...1040 Speed

2nd rack travel in: 4.00

rpm : 1130...1160 Speed

4th rack travel in: 1275

rpm : 0.00...1.40 Speed

LOW IDLE 1

Control Lever

position degrees: 16...24

Testina:

Speed rpm : 100 Minimum rack trave: 6.70 rpm : 250 Speed

Rack travel in mm : 5.10...5.30

Rack travel in mm : 2.00 rpm : 310...350 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 500

Rack travel in m: 13.00...13.10

2nd speed rpm : 600

Rack travel in m: 13.00...13.20

3rd speed rpm : 750

Rack travel in m: 13.30...13.50

4th speed rpm : 825

Rack travel in m: 13.80...14.00

5th speed rpm : 980 Rack travel in m: 14.80...15.00

Aneroid/Altitude Compensator Test

1st version

Setting

: 980 Speed rpm hPa : 1500 Pressure

: 14.20...14.30 Rack travel mm

Measurement

1/min: 980 Speed

1st pressure hPa : -

Rack travel in m: 8.80...9.00

2nd pressure hPa : 630

Rack travel in m: 11.80...11.90

3rd pressure hPa : 340

Rack travel in m: 9.90...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 500 Del.quantity cm3/: 288.0...292.0 1000 s: (285.0...295.0)

cm3 : 8.00Spread

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/: 162.0...164.0 1000 s: (159.0...167.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.20

rpm : 1030...1040 Speed

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.10...5.30

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

Note remarks

: MB 9,6 q 1 : 28.02.92 Test sheet Edition : 07.91 Replaces

: ISO-4113 Test oil

Combination no. : 0 402 646 940

Injection pump

Pump designation : PE6P120A320LS7836 : 0 412 626 840

EP type number Governor

Governor design. : RQ300/950PA971-7

Governer no.

: 0 421 801 580

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

: 200.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

: 9-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 12.40...12.60

Del.quantity cm3/: 18.2...18.4

100 s: (17.9...18.7)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 5.3...5.9

Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 600 Speed Aneroid pressure h: 800

: 182.0...184.0 Del.quantity 1000 : (179.0...187.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rom Rack travel in mm: 20.0 Testina: 1st rack travel in: 12.10 rpm : 990...1005 Speed 2nd rack travel in: 4.00 Speed rpm : 1065...1095 4th rack travel in: 1200 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm: 300 Rack travel in mm: 5.6 Testina: : 200 Speed rpm Minimum rack trave: 7.40 Speed rpm : 300
Rack travel in mm : 5.30...5.90
Rack travel in mm : 2.00 rom : 370...410 Speed Aneroid/Altitude Compensator Test 1st version Secting Speed : 600 man hPa : 800 Pressure : 12.40...12.60 Rack travel mm Measurement Speed $1/\min : 600$ 1st pressure hPa : 300 Rack travel in m: 10.50...10.70 2nd pressure hPa : 500 Rack travel in m: 11.60...11.80 3rd pressure hPa : 1000 Rack travel in m: 12.60...12.80 4th pressure hPa : 1150 Rack travel in m: 12.90...13.10 5th pressure hPa : -Rack travel in m: 10.30...10.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 Speed rpm: 950 Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1400 Speed rpm : 800 Del.quantity cm3/: 202.0...206.0 1000 s: (199.0...209.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.10 Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 45.0...75.0 1000 s: (41.0...79.0) Rack travel in mm : 10.30...10.60

Remarks:

Note remarks

Test sheet : DAF 11,7 n1 Edition : 14.02.92 : 11.91 Replaces : ISO-4113 Test oil

Combination no. : 0 402 646 949

Injection pump

Pump designation : PE6P12OA32ORS723OZ

EP type number : 0 412 626 848

Governor

: RQV250...1000PA990K Governor design.

: 0 421 815 274 Governer no.

Customer-spec. information Customer : DAF

: WS 295 G Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15) Rack travel in mm : 13.20...14.20

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 980 1st speed

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 25.4...25.6

100 s: (25.1...25.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 1.30...1.70 travel mm

2nd speed : 285 rpm travel mm

: 2.10...2.50

: 1030 3rd speed rpm

: 9.60...10.00 travel mm

: 1145 4th speed rpm

: 11.20...11.40 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1070 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 980 Speed

Aneroid pressure h: 1500 Del.quantity : 254.0...256.0

1000 : (251.0...259.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control Lever position degrees: 117...125 Testina: 1st rack travel in: 12.70 Speed rpm : 1030...1040 2nd rack travel in: 4.00 rpm : 1135...1165 Speed 4th rack travel in: 1275 Speed rpm : 0.00...1.40LOW IDLE 1 Control lever position degrees: 67...75 Testing: Speed rpm Minimum rack trave: 6.70 rpm : 250 Speed Rack travel in mm : 5.10...5.30 Rack travel in mm : 2.00 rpm : 320...360 Speed TORQUE CONTROL Dimension a mm : 1.80 Torque control curve - 1st version 1st speed rpm : 500
Rack travel in m: 12.20...12.30
2nd speed rpm : 550
Rack travel in m: 12.20...12.40 3rd speed rpm : 725 Rack travel in m: 12.60...12.80 4th speed rpm : 850 Rack travel in m: 13.20...13.40 5th speed rpm : 980 Rack travel in m: 14.00...14.20 Aneroid/Altitude Compensator Test 1st version Setting : 980 Speed rpm hPa : 1500 Pressure : 13.70...13.80 Rack travel mm Measurement 1/min: 980 Speed 1st pressure hPa : -Rack travel in m: 8.10...8.30 2nd pressure hPa : 380
Rack travel in m: 10.80...10.90
3rd pressure hPa : 150 Rack travel in m: 9.10...9.30

FUEL DELIVERY CHARACTERISTICS

1st version 1mm rack travel less than

full load rack tr: 12.70 Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.10...5.30

Remarks:

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Note remarks

Test sheet : DAF

: 28.02.92 Edition

Replaces

Test oil : ISO-4113

: 0 402 646 968 Combination no.

Injection pump

Pump designation : PE6P120A320RS7248 : 0 412 626 861

EP type number

Governor Governor design. : RQV275...1150PA986

: 0 421 813 920 Governer no.

Customer-spec. information

: DAF Customer

Engine : RS 222 L

1st version kW : 222.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0.8 diameter mn

Test lines : 1 680 750 089

Outside diameter

x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 11.70...12.70 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 11.7...12.7 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 18.4...18.6

100 s: (18.1...18.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 5.3...5.5
Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.2)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

: 1.20...1.60 travel mm

rpm : 315 : 1.80...2.20 2nd speed

travel mm

rpm : 1205 3rd speed

: 8.10...8.50 travel mm

rpm : 1340 4th speed

: 9.70...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1315 Speed

Rack travel in mm : 10.90...13.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 1000

: 184.0...186.0 Del.quantity 1000 : (181.0...189.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 115...123

Testing:

1st rack travel in: 11.20

rpm : 1180...1190 Speed

2nd rack travel in: 4.00

rpm : 1320...1350

4th rack travel in: 1450

rom : 0.00...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 79...87

Testing:

rpm : 100 Speed Minimum rack trave: 10.00 rpm : 275

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

rpm : 315...365 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 600 Speed **CDM** hPa : 1000 Pressure

: 12.20...12.30 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 9.50...9.70

2nd pressure hPa : 420

Rack travel in m: 11.60...11.70

3rd pressure hPa : 240

Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 600 Del.quantity cm3/: 120.0...122.0 1000 s: (117.0...125.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

rpm : 1180...1190 Speed

LOW IDLE

: 275 Speed rpm

Rack travel in mm : 4.60...4.80

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

E08

Note remarks

Test sheet : DAF

: 28.02.92 Edition

Replaces

: TSO-4113 Test oil

Combination no. : 0 402 646 969

Injection pump

Pump designation : PE6P12UA32URS7248Z

: 0 412 626 862 EP type number

Governor

Governor design. : RQV275...1150PA986

: 0 421 813 920 Governer no.

Customer-spec. information

Customer : DAF

Engine : RS 200 L

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Openina

pressure, bar : 207...210

Lube oil : 0,8

: 1 680 750 089 Test Lines

Outside diameter

x Wall thickness

: 8.00X2.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 11.00...12.00

: 1-5- 3- 6- 2-Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 10.8...11.8 Difference ° CS : 2.25...3.75

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 16.4...16.6

100 s: (16.1...16.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 275.0 2nd speed

Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.2)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

: 1.20...1.60 travel mm

2nd speed rpm : 315

: 1.80...2.20 travel mm

: 1205 3rd speed man

: 8.10...8.50 travel mm

rpm : 13404th speed

: 9.70...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm: 1335

Rack travel in mm : 9.00...11.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rom : 1000Speed

Aneroid pressure h: 1000 Del.quantity : 164.0...166.0

1000 : (161.0...169.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 10.30

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

Speed rpm : 1285...1315 4th rack travel in: 1450

Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever

position degrees: 79...87

Testing:

Speed : 100 ricin . Minimum rack trave: 10.00 rpm : 275

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

rpm : 315...365 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rpm hPa : 1000 Pressure

Rack travel nm : 12.30...11.40

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 9.00...9.20 2nd pressure hPa : 340 Rack travel in m: 10.70...10.80

3rd pressure hPa : 200

Rack travel in m: 9.60...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 115.0...117.0 1000 s: (112.0...120.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.30

rpm : 1190...1230 Speed

LOW IDLE

: 275 Speed rpm

Rack travel in mm : 4.60...4.80

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

Note remarks

Test sheet : DAF

: 28.02.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 970

Injection pump

Pump designation : PE6P12OA32ORS7248Y

: 0 412 626 863 EP type number

Governor

: RQV275...1150PA986 Governor design.

: 0 421 813 920 Governer no.

Customer-spec. information

Customer : DAF

Engine : RS 180 L

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 089

Outside diameter

x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 10.00...11.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - * : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 10.2...11.2 Difference * CS : 2.25...3.75

BASTC SETTING

rpm: 1000 1st speed

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 14.5...14.7

100 s: (14.2...15.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed

Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.2)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 275 1st speed : 1.20...1.60 travel mm

rpm : 315 2nd speed

: 1.80...2.20 travel mm

rpm : 1205 3rd speed

: 8.10...8.50 travel mm

rpm : 1340 4th speed

: 9.70...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1330 Speed

Rack travel in mm : 9.40...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Aneroid pressure h: 1000

Del.quantity : 145.5...147.5 1000 : (142.5...150.5)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 116...124

Testina:

1st rack travel in: 9.70

Speed rpm : 1180...1190

2nd rack travel in: 4.00

Speed rpm : 1295...1325 4th rack travel in: 1450

Speed rpm : 0.00...1.40

LOW IDLE 1 Control lever

position degrees: 79...87

Testina:

: 100 Speed rpm Minimum rack trave: 10.00 rpm : 275 Speed

Rack travel in mm : 4.60 ... 4.80

CONSTANT REGULATION

rpm : 315...365 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rom hPa : 1000 Pressure

: 10.70...10.80 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 8.80...9.00

2nd pressure hPa : 250

Rack travel in m: 10.20...10.30 3rd pressure hPa : 140

Rack travel in m: 9.40...9.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 600

Del.quantity cm3/: 107.0...109.0

1000 s: (104.0...112.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.70

rpm : 1180...1190 Speed

LOW IDLE

: 275 Speed rpm

Rack travel in mm : 4.60...4.80

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

Note remarks

Test sheet : DAF Edition : 14.02.92

Replaces : +

Test oil : ISO-4113

Combination no. : 0 402 646 971

Injection pump

Pump designation : PE6P12DA32DRS7218Z EP type number : 0 412 626 847

Governor

Governor design. : RQV250...1000PA939-2

Governer no. : 0 421 813 986

Customer-spec. information Customer : DAF

Engine : WS 242 L

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40 : (5.25...5.45)

Rack travel in mm : 13.30...14.30

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ}$: 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 13.5...14.5 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 20.5...20.7

100 s: (20.2...21.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0 Rack travel in mm : 6.3...6.5 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 1045

travel mm : 7.70...8.20

2nd speed rpm : 275

travel mm : 1.10...1.60

3rd speed rpm : 380

travel mm : 2.40...2.90

4th speed rpm : 675

travel mm : 4.20...4.70

5th speed rpm: 1310

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1075 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

Aneroid pressure h: 1000 Del.quantity: 205.0...207.0 Del.quantity : 205.0...210.0)

cm3 : 5.00 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 12.80

rpm : 1040...1050 Speed

2rd rack travel in: 4.00

rpm : 1130...1160 Speed

4th rack travel in: 1250

rpm : 0.00...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 78...86

Testing:

Speed rpm : 100 Minimum rack trave: 6.50 Speed rpm : 275

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 300...350

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rpm hPa : 1000 Pressure

: 13.80...13.90 Rack travel mm

Measurement

 $1/\min : 600$ Speed

1st pressure hPa : -Rack travel in m: 11.60...11.80

2nd pressure hPa : 420

Rack travel in m: 13.30...13.40 3rd pressure hPa : 260

Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 600

Del.quantity cm3/: 147.0...149.0 1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

Speed rpm : 1040...1050

LOW IDLE

rpm : 275 Speed

Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : DAF Test sheet Edition : 14.02.92

Combination no. : 0 402 646 972

Injection pump

Pump designation : PE6P120A320RS7218 EP type number : D 412 626 839

Governor

Replaces

Test oil

Governor design. : RQV250...1000PA939-2

: ISO-4113

: 0 421 813 986 Governer no.

Customer-spec. information Customer : DAF

Engine : WS 268 L

: 268.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Operaina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00X2.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 5.30...5.40 : (5.25...5.45) Rack travel in mm : 14.30...15.30

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 14.5...15.5 Difference ° CS : 2.25...3.75

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 14.80...14.90

Del.quantity cm3/: 23.0...23.2

100 s: (22.7...23.5)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 275.0 Rack travel in mm : 6.3...6.5 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1045 1st speed

: 7.70...8.20 travel mm rpm : 275 2nd speed

travel mm

: 1.10...1.60 : 380 3rd speed rpm

: 2.40...2.90 travel mm 4th speed : 675

rpm : 4.20...4.70 travel mm

: 1310 5th speed rom

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

> Degree: -1 rpm : 1075

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed Aneroid pressure h: 1000

: 230.0...232.0 Del.guantity

: (227.0...235.0) 1000

: 5.00 Spread cm31000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 13.80

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1150...1180 Speed

4th rack travel in: 1250

nom : 0.00...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 78...86

Testina:

Speed rom Minimum rack trave: 6.50 rpm : 275 Speed

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

: 300...350 Speed rom

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed mq: hPa : 1000 Pressure

: 14.80...14.90 Rack travel mm

Measurement

 $1/\min : 600$ Speed

1st pressure hPa : -

Rack travel in m: 12.20...12.40 2nd pressure hPa : 490

Rack travel in m: 14.20...14.30

3rd pressure hPa : 280

Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 158.0...160.0 1000 s: (155.0...163.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.80

Speed rpm : 1040...1050

LOW IDLE

rpm : 275 Speed

Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

Note remarks

: DAF Test sheet

: 14.02.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 973

Injection pump

Pump designation : PE6P120A320RS7218Z

EP type number : 0 412 626 847

Governor

Governor design: RQ250/1000PA936-2

: 0 421 801 633 Governer no.

Customer—spec. information Customer : DAF

Engine : WS 242 L

1st version kW : 268.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 089

Outside diameter x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.30...5.40 Prestroke mm

: (5.25...5.45)
Rack travel in mm : 13.30...14.30
Firing order : 1-5-3-6-2-4

: C-60-120-130-2/0-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 13.5...14.5 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 20.5...20.7

100 s: (20.2...21.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0 Rack travel in mm : 6.3...6.5 Del.guantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8 Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 550

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 203.0...210.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

rpm : 550 Speed Rack travel in mm: 16.0

Testing:

1st rack travel in: 12.80

rpm : 1035...1050 Speed

2nd rack travel in: 4.00

rpm : 1120...1150 Speed

4th rack travel in: 1250

rom : 0.00...1.40Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 275 Speed Rack travel in mm: 5.00

Testing:

rpm : 100 Speed Minimum rack trave: 6.50 rpm : 275

Rack travel in mm : 4.90...5.10

Rack travel in mm: 2.00 Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm :-

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 14.80...14.90

2nd speed rpm : 1000

Rack travel in m: 14.70...14.90

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rpm hPa : 1000 Pressure

Rack travel mm : 13.80...13.90

Measurement

Speed 1/min: 600

1st pressure hPa :-

Rack travel in m: 11.60...11.80

2nd pressure hPa : 420

Rack travel in m: 13.30...13.40

3rd pressure hPa : 260

Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 600 Del.quantity cm3/: 147.0...149.0 1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

rpm : 1035...1050 Speed

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

Note remarks

: DAF Test sheet

Edition : 14.02.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 974

Injection pump

Pump designation: PE6P12OA32OR\$7218

: 0 412 626 839 EP type number

Governor

Governor design. : RQ250/1000PA936-2

: 0 421 801 633 Governer no.

Customer-spec. information

: DAF Customer

: WS 268 L Engine

1st version kW : 268.0

: 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 089 Test lines

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.30...5.40 Prestroke mm : (5.25...5.45)

Rack travel in mm : 14.50...15.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 14.5...15.5 Difference ° CS : 2.25...3.75

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 14.80...14.90

Del.quantity cm3/: 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 275.0 2nd speed

Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -1 rpm : 550

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 230.0...235.0)

: 5.00 Spread cm3 : (9.00) 1000

RATED SPEED

1st version

Setting point:

Speed : 550 rom Rack travel in mm: 16.0

Testina:

1st rack travel in: 13.80

rpm : 1035...1050 Speed

2nd rack travel in: 4.00

Speed rpm : 1140...1170 4th rack travel in: 1250

ppm : 0.00...1.40Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm Rack travel in mm: 5.0

Testina:

Speed rpm : 100

Minimum rack trave: 6.50 Speed rpm : 275

Rack travel in mm : 4.90...5.10 Rack travel in mm : 2.00 Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 850 Rack travel in m: 15.30...15.40

2nd speed rpm : 1000

Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version

Settina

: 600 Speed rom hPa : 1000 Pressure

: 14.80...14.90 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.20...12.40

2nd pressure hPa : 490

Rack travel in m: 14.20...14.30 3rd pressure hPa : 280 Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 600 Speed

Del.quantity cm3/: 158.0...160.0 1000 s: (155.0...163.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80

rpm : 1035...1050 Speed

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

Note remarks

Test sheet : DAF

: 21.02.92 Edition

Replaces

Test oil : ISO-4113

: 0 402 646 987 Combination no.

Injection pump

Pump designation : PE6P120A320RS7218Y

EP type number : 0 412 626 859

Governor

Governor design. : RQ250/1000PA936-2

: 0 421 801 633 Governer no.

Customer—spec. information

: DAF Customer

Engine : WS 222 L

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter nm : 0.8

: 1 680 750 089 Test lines

Outside diameter x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40

: (5.25...5.45)

Rack travel in mm : 13.30...14.30

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 13.5...14.5 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 19.5...19.7

100 s: (19.2...20.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed

Rack travel in mm : 6.3...6.5 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3) cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 550 Speed

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

Aneroid pressure h: 1000

: 195.0...197.0 Del.quantity 1000 : (192.0...200.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 16.0 Testing:

1st rack travel in: 12.70

rpm : 1035...1050 Speed

2nd rack travel in: 4.00

Speed rpm : 1130...1160 4th rack travel in: 1250

rpm : 0.00...1.40 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm Rack travel in mm: 5.0

Testing:

Speed rpm : 100 Minimum rack trave: 6.50 : 275 man

Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00

Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

rpm : 850 1st speed

Rack travel in m: 14.70...14.80

rpm : 1000 2nd speed

Rack travel in m: 14.60...14.80

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 600 MCC hPa : 1000 Pressure

: 13.70...13.80 Rack travel mm

Measurement

Speed $1/\min : 600$

1st pressure hPa : -

Rack travel in m: 11.50...11.70

2nd pressure hPa : 400

Rack travel in m: 13.20...13.30 3rd pressure hPa : 230

Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 139.0...141.0 1000 s: (136.0...144.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

rpm : 1035...1050 Speed

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks : 0-60-120-180-240-300 Test sheet : DAF Phasina Edition : 21.02.92 Tolerance + - ° : 0.50 (0.75) Replaces Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 402 646 988 BASIC SETTING Injection pump Pump designation : PE6P120A320RS7230X 1st speed rpm: 980 EP type number : 0 412 626 868 Rack travel in mm : 13.90...14.00 Governor Governor design: : RQV250...1000PA990K Del.quantity cm3/: 25.8...26.0 : 0 421 815 274 Governer no. Customer-spec. information 100 s: (25.5...26.3) Customer : DAF cm3 : 0.5Spread Engine : WS 295 L 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 250.0 2nd speed Rack travel in mm: 5.8...6.0 Test oil Del.quantity cm3/: 1.4...2.0 inlet temp. °C : 38...42 100 s: (1.1...2.3) Overflow valve Spread cm3 : 0.8: 1 419 992 198 100 s: (1.2) (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder : 1 688 901 105 assembly GUIDE SLEEVE TRAVEL 250 1st speed rpm : 1.30...1.70 **Openina** travel mm : 207...210 285 pressure, bar 2nd speed rpm : 2.10...2.50 travel mm Orifice plate 3rd speed : 685 rpm : 5.20...6.60 diameter mm 3.0: travel mm 4th speed : 1030 rpm 9.60...10.00 travel mm Test lines : 1 680 750 089 1145 5th speed rpm : 11.20...11.40 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 8.00x2.50x600 Control-lever position Degree: -1 rpm : 1195 (A) Injection pump setting values Insp. values in parentheses Rack travel in mm : 11.60...14.20 Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values BEGINNING OF DELIVERY 1st version rpm : 980 Test pressure, bar: 25...27 Speed Aneroid pressure h: 1500

Del.quantity : 250.0...263.0)

Prestroke mm

: 5.00...5.10 : (4.95...5.15)

Rack travel in mm: 13.50...14.50

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 66...74

Testing:

1st rack travel in: 12.90

rpm : 1030...1040 Speed

2nd rack travel in: 4.00

Speed rpm : 1130...1160 4th rack travel in: 1275

rpm : 0.00...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 12...20

Setting point w/out bumper spring

rpm : 250 Speed Rack travel in mm: 5.2

Testing:

rpm : 100 Speed Minimum rack trave: 6.70

Speed rpm : 250
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00

rpm : 340...380 Speed

TORQUE CONTROL

Dimension a mm : 2.20

Torque control curve - 1st version

1st speed rpm : 400

Rack travel in m: 12.00...12.10

: 600 2nd speed rpm

Rack travel in m: 12.30...12.40

3rd speed rpm : 825

Rack travel in m: 13.30...13.50

4th speed rpm : 980

Rack travel in m: 14.20...14.40

Aneroid/Altitude

Compensator Test

1st version

Setting

: 980 Speed rpm hPa : 1500 Pressure

: 13.90...14.00 Rack travel mm

Measurement

1/min: 980 Speed

1st pressure hPa : -

Rack travel in m: 8.70...8.90

2nd pressure hPa : 830

Rack travel in m: 12.60...12.70

3rd pressure hPa : 420

Rack travel in m: 9.90...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Arienoid pressure h: 1500

Speed rpm : 600 Del.quantity cm3/: 255.0...259.0 1000 s: (252.0...262.0)

cm3 : 8.00Spread

1000 s: (12.0)

Aneroid pressure n: -

Speed rpm : 600 Del.quantity cm3/ : 159.0...161.0 1000 s: (156.0...164.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.90

rpm : 1030...1040 Speed

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 5.10...5.30

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

Note remarks

Test sheet : DAF Edition : 21.02.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 989

Injection pump

Pump designation : PE6P120A320RS7230Y

EP type number : 0 412 626 867

Governor

: RQV250...1000PA990K Governor design.

Governer no. : 0 421 815 274

Customer-spec, information : DAF Customer

Engine : WS 315 L

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter

x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 14.00...15.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 980

Rack travel in mm : 14.50...14.60

Del.quantity cm3/: 27.3...27.5

100 s: (27.0...27.8)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 5.8...6.0

Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3) cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpe : 250 : 1.30...1.70

travel mm

2nd speed rpm : 285 travel mm : 2.10...2.50

3rd speed rpm : 685

: 6.20...6.60 travel mm

4th speed

: 1030 rpm

travel mm

: 9.60...10.00

5th speed rpm

1145 11.20...11.40 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1190 Speed

Rack travel in mm : 12.20...14.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 1500 Del.quantity : 273.0...275.0 1000 : (270.0...278.0)

cm3 : 5.00 1000 : (9.00) Spread cm3 RATED SPEED 1st version Control Lever position degrees: 66...74 Testing: 1st rack travel in: 13.50 Speed rpm : 1030...1040 2nd rack travel in: 4.00 Speed rpm : 1135...1165 4th rack travel in: 1275 Speed rpm : 0.00...1.40 Speed LOW IDLE 1 Control Lever position degrees: 12...20 Testing: Speed : 100 rom Minimum rack trave: 6.70 rpm : 250

Rack travel in mm: 5.10...5.30 Rack travel in mm: 2.00 Speed rpm: 340...380

TORQUE CONTROL : 2.20 Dimension a mm Torque control curve - 1st version 1st speed rpm : 400 Rack travel in m: 12.60...12.70 2nd speed rpm : 600 Rack travel in m: 13.00...13.20 nom : 800 3rd speed Rack travel in m: 14.00...14.20

4th speed rpm : 980 Rack travel in m: 14.80...15.00

Aneroid/Altitude Compensator Test

1st version Setting Speed : 980 rpm hPa : 1500 Pressure Rack travel mm : 14.50...14.60

Measurement

1st pressure hPa : -Rack travel in m: 9.00...9.20 2nd pressure hPa : 760 Rack travel in m: 13.10...13.20 3rd pressure hPa : 350

Rack travel in m: 10.40...10.60

1/min: 980

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1500 Speed rpm : 600 Del.quantity cm3/: 281.0...285.0 **1000 s: (278.0...288.0)**

Spread cm3 : 8.001000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/: 168.0...170.0 1000 s: (165.0...173.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.50 rpm : 1030...1040 Speed

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.10...5.30

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Speed

Note remarks

: MB 12,8 o 2 Test sheet Edition : 14.02.92 : D8.91 Replaces

: ISO-4113 Test oil

: 0 402 648 895 Combination no.

Injection pump

Pump designation : PE8P120A320LS7835 EP type number : 0 412 628 847

Governor

Governor design. : RQ300/1050PA972-1

: 0 421 801 545 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M402 A Engine

: 280.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1.417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.50...5.60 : (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.20...14.40

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

: 225.0...227.0 Del.quantity

1000 : (222.0...230.0)

cm3 : 6.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm

Rack travel in mm: 20.0 Testina: 1st rack travel in: 13.00 Speed rpm : 1090...1105 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1350 rom : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm : 6.5 Testina: Speed : 200 rpm Minimum rack trave: 7.80 : 300 rpm Rack travel in mm : 6.20...6.80 Rack travel in mm : 2.00 : 380...420 Speed man TORQUE CONTROL Dimension a mm : 0.50 : 1050 2nd speed rpm Rack travel in m: 14.00...14.20 3rd speed rpm : 800 Rack travel in m: 14.60...14.80 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 1000 Pressure Rack travel mm : 14.20...14.40 Measurement 1/min: 600 Speed 1st pressure hPa : 400 Rack travel in m: 10.80...11.10 2nd pressure hPa : 650 Rack travel in m: 13.00...13.20 3rd pressure hPa : 1200 Rack travel in m: 14.30...14.40 * FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 Speed rpm : 1050 Del.quantity cm3/: 214.0...217.0

1000 s: (211.0...220.0)

cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1500

Speed rpm : 800

Del.quantity cm3/: 232.0...236.0

1000 s: (229.0...239.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h:
Speed rpm : 500

Del.quantity cm3/: 132.0...134.0

1000 s: (129.0...137.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.00 Speed rom : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 30.0...70.0 1000 s: (26.0...74.0) Rack travel in mm : 10.10...10.50

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Spread

Note remarks

Test sheet

: 28.02.92 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 670 809

Injection pump

Pump designation: PE12P120A320LS7807-2

: 0 412 620 812 EP type number

Governor

Governor design. : RSV375...950P0A535-5

: 0 421 833 374 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 444 LA

: 493.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00 Firing order

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.90...15.10

Del.quantity cm3/: 22.0...22.2

100 s: (21.7...22.5)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 375.0 Rack travel in mm : 5.4...5.9 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 809

Rack travel in mm : 0.30...1.40

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 800

Del.quantity : 220.0...222.0

1000 : (217.0...225.0)

Spread cm3 : 6.00

1000 : (10.09)

RATED SPEED

1st version Control lever position degrees: 23...31 1st version Testing: 1st rack travel in: 13.80 rpm : 1070...1080 Speed 2nd rack travel in: 4.00 Spread : 1130...1160 Speed COM 4th rack travel in: 1200 rpm : 0.30...1.70Speed Speed rem LOW IDLE 1 Control lever position degrees: 9...17 Setting point w/out bumper spring Aneroid pressure h: rpm : 375 Speed Rack travel in mm: 6.3 Testing: Spread Speed : 100 man Minimum rack trave: 13.00 : 375 rom Rack travel in mm : 6.20...6.50 **BREAKAWAY** SET IDLE AUXILIARY SPRING 1st version Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version Speed 1st speed rpm : 1030 Rack travel in m: 14.80...15.00 STARTING FUEL DELIVERY 2nd speed rpm : 800 Rack travel in m: 15.70...15.90 od speed rpm : 925 rpm 3rd speed Rack travel in m: 15.10...15.30 Aneroid/Altitude Compensator Test LOW IDLE Speed rpm : 375 Rack travel in mm : 5.40...5.90 Del.quantity cm3/ : 14.0...20.0 1000 s: (11.0...23.0) 1st version Settina Speed : 600 man hPa : 800 Pressure Spread : 14.90...15.10 Rack travel mm Remarks: Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 11.30...11.50 2nd pressure hPa : 500 Rack travel in m: 13.40...13.60 3rd pressure hPa : 1000 Rack travel in m: 15.40...15.60 Observe VDT-I-420/120 4th pressure hPa : -Rack travel in m: 9.90...10.20 FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 1250 Speed rpm : 1030 Del.quantity cm3/ : 225.0...228.0 1000 s: (222.0...231.0) cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1250 : 800 Del.quantity cm3/: 241.0...245.0 1000 s: (238.0...248.0) Spread cm3 : 8.00 1000 s: (12.0) rpm : 500 Del.quantity cm3/: 122.0...124.0 1000 s: (119.0...127.0) cm3 : 8.00 1000 s: (12.0) 1mm rack travel less than full load rack tr: 13.80

rpm : 1070...1080

Speed rpm : 100 Del.quantity cm3/ : 240.0...260.0 1000 s: (236.0...264.0)

cm3 : 8.00

1000 s: (12.00)

On activation of the starting solenoid, the start position must be reached.

Note remarks

: MAN Test sheet Edition : 14.02.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 735 804

Injection pump

Pump designation : PES5P120A720/3LS7250

: 0 412 725 809 EP type number

Governor

: RQV325...1000PA962-5 Governor design.

: 0 421 815 300 Governer no.

Customer-spec. information Customer : MAN

: D2865LF03/LU03 Engine

: 235.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 089 Test Lines

Outside diameter x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.80...4.90 Prestroke mm

: (4.75...4.95)
Rack travel in mm : 15.00...16.00
Firing order : 1-3-5-4-2 Firing order

Phasing : 0-72-144-216-288

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 5

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60 & maximum rack tra: 15.0...16.0 Difference * CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 26.6...26.8

100 s: (26.3...27.1)

Spread cm3 : 0.6

100 s: (--)

rpm : 325.0 2nd speed Rack travel in mm : 5.9...6.3 Del.quantity cm3/ : 4.7...5.3 100 s: (4.4...5.6)

cm3 : 1.0 100 s: (1.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

Spread

rpm : 1050 : 8.70...8.90 1st speed travel mm

2nd speed rpm : 325 : 1.90...2.10 travel mm

3rd speed : 520 rpm

travel mm : 4.20...4.60

4th speed : 900 rpm

: 5.90...6.30 travel mm : 1350

5th speed rpm

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rom : 1140 Rack travel in mm: 10.60...13.20 1st pressure hPa : -Rack travel in m: 9.20...9.40 FULL LOAD DELIV. AT FULL LOAD STOP 2nd pressure hPa : 170 Rack travel in m: 9.40...9.50

3rd pressure hPa : 600
Rack travel in m: 11.90...12.10 1st version rpm : 650 Speed Aneroid pressure h: 1200 Del.quantity : 200.0...271.0) START CUT-OUT Spread cm3 1/min: 245 (265) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 285...293 1st version Ameroid pressure h: 1200 rpm : 900 Testing: Speed 1st rack travel in: 11.90 Speed rpm : 1040...1050 Del.quantity cm3/: 261.0...265.0 1000 s: (258.0...268.0) 2nd rack travel in: 4.00 Aneroid pressure h: 1200 rpm : 1140...1170 Speed Speed · 1000 riom Del.quantity cm3/: 242.0...248.0 1000 s: (239.0...251.0) 4th rack travel in: 1350 rpm : 0.00...1.00 Speed Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 159.0...161.0 LOW IDLE 1 Control lever 1000 s: (156.0...164.0) position degrees: 240...248 Testing: rpm : 100 BREAKAWAY Speed Minimum rack trave: 7.50 1st version rpn Rack travel in mm : 6.00...6.20 1mm rack travel less than CONSTANT REGULATION full load rack tr: 11.90 rpm : 340...450 Speed rpm : 1040...1050 Speed TORQUE CONTROL STARTING FUEL DELIVERY Dimension a mm Torque control curve - 1st version 1st speed rpm : 650 rpm : 100 Del.quantity cm3/: 180.0...200.0 1000 s: (176.0...204.0) Rack travel in m: 12.70...12.80 2nd speed rpm : 900 Rack travel in m: 13.30...13.50 3rd speed rpm : 1000 LOW IDLE Rack travel in m: 12.90...13.10 Speed rpm Rack travel in mm : 5.90...6.30 Aneroid/Altitude Del.quantity cm3/: 47.0...53.0 1000 s: (44.0...56.0) Compensator Test cm3 : 10.00 Spread 1000 s: (14.00) 1st version Setting : 900 Remarks: Speed rom : MAN-NR. 3-7200 hPa : 1200 Pressure Rack travel mm : 13.20...13.50 Setting and blocking of pointer of start-of-delivery sensor on cyl. 5 Measurement

start of delivery

Speed

1/min: 900

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.80...4.90 Prestroke mm : (4.75...4.95) Note remarks Rack travel in mm : 15.00...16.00 Test sheet Firing order : 1- 3- 5- 4-: MAN Edition : 14.02.92 Replaces : ISO-4113 Test oil : 0-72-144-216-288 Phasing Combination no. : 0 402 735 805 : 0.50 (0.75) Tolerance + - * Injection pump Pump designation : PES5P120A720/3LS7250 Time to cyl. no. : 5 : 0 412 725 809 EP type number Governor BEGINNING OF DELIVERY DIFFERENCE : RQV325...1000PA962-6 Governor design. betw. rack trav. m: 4.40...4.60 : 0 421 815 301 & maximum rack tra: 15.0...16.0 Governer no. Difference * CS : 1.75...3.25 Customer—spec. information BASIC SETTING Customer : MAN : D2865LF06/LUC6 rpm: 900 Engine 1st speed Rack travel in mm : 13.50...13.60 1st version kW : 235.0 Rated speed : 2000 Del.guantity cm3/: 26.0...26.2 TEST BENCH REQUIREMENTS 100 s: (25.7...26.5) Test oil inlet temp. °C : 38...42 cm3 : 0.5Spread 100 s: (0.9) Overflow valve : 1 419 992 198 2nd speed rpm : 325.0 Rack travel in mm : 5.9...6.3 Inlet press., bar: 1.50 Del.quantity cm3/: 4.7...5.3 100 s: (4.4...5.6) Test nozzle holder cm3 : 1.0assembly : 1 688 901 105 Spread 100 s: (1.4) Opening pressure, bar : 207...210 (B) Setting of injection pump with governor Orifice plate GUIDE SLEEVE TRAVEL diameter mm : 0,8 1st speed rpm : 1050 8.70...8.90 travel mm Test lines : 1 680 750 089 : 325 2nd speed rpm : 1.90...2.10 travel mm : 520 Outside diameter 3rd speed rpm x Wall thickness : 4.10...4.70 travel mm : 8.00x2.50x600 : 810 4th speed x Length mm rpm : 5.80...6.20 travel mm (A) Injection pump setting values : 1350 5th speed rpm Insp. values in parentheses Set equal delivery quant. : 13.00...14.00 travel mm GUIDE SLEEVE POSITION per values Control-Lever position BEGINNING OF DELIVERY Degree: -1

rpm : 1140

Speed

Test pressure, bar: 25...27

Rack travel in mm : 10.80...13.40 Measurement FULL LOAD DELIV. AT FULL LOAD STOP 1/min: 900 Speed 1st version 1st pressure hPa : -Rack travel in m: 9.20...9.40 rpm : 900 Speed 2nd pressure hPa : 170 Arieroid pressure n: 1200 : 260.0...262.0 Rack travel in m: 9.60...9.70 Del.quantity 1000 : (257.0...265.0) 3rd pressure hPa : 600 : 5.00 Rack travel in m: 12.00...12.40 Spread cm3: (9.00) 1000 START CUT-OUT RATED SPEED 1/min : 245 (265) Speed 1st version Control Lever FUEL DELIVERY CHARACTERISTICS position degrees: 285...293 1st version Testing: 1st rack travel in: 12.10 Aneroid pressure h: 1200 : 1000 rpm : 1040...1050 Speed rpm Del.quantity cm3/: 248.0...254.0 2nd rack travel in: 4.00 1000 s: (245.0...257.0) rpm : 1140...1170 Speed 4th rack travel in: 1350 Aneroid pressure h: 1200 rpm : 0.00...1.00Speed Speed rom Del.quantity cm3/: 270.0...276.0 1000 s: (267.0...279.0) LOW IDLE 1 Control Lever Aneroid pressure h: -: 500 position degrees: 240...248 rpm Del.quantity cm3/: 159.0...161.0 1000 s: (156.0...164.0) Testina: : 100 Speed rpm Minimum rack trave: 7.60 **BREAKAWAY** : 325 rom Rack travel in mm : 6.00...6.20 1st version 1mm rack travel less than CONSTANT REGULATION rpm : 340...450 Speed full load rack tr: 12.10 rpm : 1040...1050 TORQUE CONTROL Speed Dimension a mm Torque control curve - 1st version STARTING FUEL DELIVERY rpm : 900 1st speed Rack travel in m: 13.50...13.60 d speed rpm : 1000 Rack travel in m: 13.10...13.30 Speed rpm : 100 Del.quantity cm3/ : 180.0...200.0 1000 s: (176.0...204.0) 2nd speed : 650 3rd speed rpm Rack travel in m: 12.70...12.90 LOW IDLE 4th speed rpm : 400 Rack travel in m: 11.90...12.20 Speed rpm : 325
Rack travel in mm : 5.90...6.30
Del.quantity cm3/ : 47.0...53.0 Aneroid/Altitude Compensator Test 1000 s: (44.0...56.0) cm3 : 10.00 Spread 1000 s: (14.00) 1st version Setting : 900 Remarks: Speed rom : 1200 : MAN-NR. 3-7202 Pressure hPa

Rack travel mm

: 13.50...13.60

Note remarks

Test sheet : CUM 5,9 w 2 Edition : 14.02.92 Replaces : 11.91 Test oil : ISO-4113

Combination no. : 0 402 736 811

Injection pump

Pump designation: PES6P110A120RS7213

: 0 412 716 804 EP type number

Governor

: RQV400...1250PA964-3 Governor design.

: 0 421 815 255 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6BTA-A

: 147.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

: 1 688 901 101 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 4.35...4.45 Prestroke mm : (4.30...4.50)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 14.80...14.90

Del.quantity cm3/: 15.8...16.0

100 s: (15.5...16.3)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7 Del.quantity cm²/: 3.2...3.8

100 s: (3.0...4.0)

cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 400 1st speed

1.60...1.80 travel mm

2nd speed rpm : 600

: 2.80...3.30 travel mm

rpm : 1300 3rd speed

travel mm : 7.20...7.40

rpm : 1500 4th speed

travel mm : 8.90...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed Aneroid pressure h: 1200

: 158.5...160.5 Del.quantity

1000 : (155.5...163.5)

: 5.00 cm3 Spread 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 56...64

Testina:

1st rack travel in: 13.80

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

: 1460. . 1490 mqn Speed

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 12...20

Testing:

: 275 Speed CDW.

Minimum rack trave: 7.20

: 400 rpm

Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

rpm : 1250 1st speed

Rack travel in m: 14.80...14.90

2nd speed rpm : 800

Rack travel in m: 13.20...13.40

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 1250 hPa : 1200 Pressure

: 14.80...14.90 Rack travel mm

Measurement

Speed 1/min: 1250

1st pressure hPa : -

Rack travel in m: 8.20...8.60

2nd pressure hPa : 410 Rack travel in m: 10.00...10.10

3rd pressure hPa : 755

Rack travel in m: 13.20...13.60

START CUT-OUT

1/min: 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

rpm : 800 Speed

Del.quantity cm3/: 156.5...162.5 1000 s: (153.5...165.5)

cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

: 500 Speed מוכורו Del.quantity cm3/: 90.0...94.0 1000 s: (88.0...96.0)

BREAKAWAY

Spread

1st version

1mm rack travel less than

full load rack tr: 13.80

rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 135.0...175.0 1000 s: (130.0...180.0) Rack travel in mm: 11.90...12.90

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.50...5.70 Del.quantity cm3/: 32.0...38.0 1000 s: (30.0...40.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: C.D.C. # 3918321

Start-of-delivery mark = 5.5° after

start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Note remarks Test pressure, bar: 22...24 : CUM 8,3 r 6 : 14.02.92 Test sheet Prestroke mm : 4.35...4.45 : (4.30...4.50) Edition Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : 11.91 Replaces Test oil : ISO-4113 : 0 402 736 812 Combination no. Injection pump Phasing : 0-60-120-180-240-300 Pump designation : PES6P11UA120RS7214 Tolerance + - ° EP type number : 0 412 716 805 : 0.50 (0.75) Governor Governor design. : RQV350...1200PA964-4 Time to cyl. no. : 1 : D 421 815 256 BASIC SETTING Governer no. 1st speed rpm: 1200 Customer—spec. information Customer : C.D.C. Rack travel in mm : 12.30...12.40 Engine : 6CTA-A Del.quantity cm3/: 14.7...14.9 1st version kW : 156.0 Rated speed : 2400 100 s: (14.4...15.2) TEST BENCH REQUIREMENTS cm3 : 0.5Spread 100 s: (0.9) Test oil inlet temp. °C : 38...42 rpm : 350.0 2nd speed Rack travel in mm: 5.4...5.6 Overflow valve Del.quantity cm3/: 2.7...3.3 100 s: (2.5...3.5) : 1 417 413 047 cm3 : 0.8 Inlet press., bar: 1.50 Spread 100 s: (1.2) Overflow quantity min. 1/h: 115...125 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 101 GUIDE SLEEVE TRAVEL assembly rpm : 350 1st speed : 1.80...2.00 Opening | travel mm : 207...210 2nd speed rpm : 450 pressure, bar : 3.10...3.50 travel mm : 700 Orifice plate 3rd speed rpm : 5.90...6.30 diameter mm : 0,6 travel mm 1200 4th speed rpm : 9.00...9.20 travel mm Test lines : 1 680 750 008 : 1400 5th speed rpm : 10.70...11.10 travel mm Outside diameter x Wall thickness FULL LOAD DELIV. AT FULL LOAD STOP x Length mm : 6.00x2.00x600 1st version rpm : 1200 (A) Injection pump setting values Speed Insp. values in parentheses Aneroid pressure h: 1200

Del.quantity

1000 : (144.5...149.5)

Set equal delivery quant.

per values _

cm3 : 5.00Spread 1000 : (9.00) RATED SPEED

1st version Control lever

position degrees: 60...68

Testing:

1st rack travel in: 11.30

rpm : 1245...1255 Speed

2nd rack travel in: 4.00

Speed rpm: 1375...1405 4th rack travel in: 1500 Speed

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 11...19

Testing:

Speed mqr! Minimum rack trave: 7.20 : 350 rom

Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 12.30...12.40

rpm : 650 2nd speed

Rack travel in m: 10.90...11.30

3rd speed rpm : 550

Rack travel in m: 10.80...11.20

Aneroid/Altitude Compensator Test

1st version

Setting

: 1200 Speed rpm hPa : 1200 Pressure

Rack travel mm : 12.30...12.40

Measurement

1/min: 1200 Speed

1st pressure hPa : -

Rack travel in m: 7.50...7.90

2nd pressure hPa : 225

Rack travel in m: 8.90...9.00

3rd pressure hPa : 575 Rack travel in m: 11.20...11.60

START CUT-OUT

1/min: 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 650 Speed rpm

Del.quantity cm3/: 151.0...157.0 1000 s: (148.0...160.0)

cm3 : 8.00 1000 s: (12.0) Spread

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 86.5...90.5 1000 s: (84.5...92.5)

BREAKAWAY '

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 1245...1255 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 135.0...175.0

1000 s: (130.0...180.0)

Rack travel in mm : 10.70...11.70

LOW IDLE

Speed rpm : 350

Rack travel in nm: 5.40...5.60 Del.quantity cm3/: 27.0...33.0 1000 s: (25.0...35.0) Spread cm3 : 8.00 1000 s: (12.00)

Remarks:

: C.D.C. # 3917088

Start-of-delivery mark = 5.5° after

start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

Note remarks

: CUM 8,3 r 1 Test sheet Edition : 14.02.92 : 11.91 Replaces Test oil : ISO-4113

: 0 402 736 814 Combination no.

Injection pump

Pump designation : PES6F110A120RS/214

EP type number : 0 412 716 805

Governor

Governor design. : RQV350...1200PA964-6

: C 421 815 258 Governer no.

Customer-spec. information Customer : C.D.C.

: 6CTA-A Engine

: 187.0 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 4.35...4.45 Prestroke mm

: (4.30...4.50)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 14.50...14.60

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.4...5.6 Del.quantity cm3/: 2.7...3.3

100 s: (2.5...3.5)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

1.80...2.00 travel mm

2nd speed : 450 חכיו

: 3.10...3.50 rpm : 700 travel mm

3rd speed

: 5.90...6.30 travel mm : 1200 4th speed rpm

: 9.00...9.20 travel mm

5th speed : 1400 rpm

: 10.70...11.10 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

Aneroid pressure h: 1200

Del.quantity : 183.0...185.0

1000 : (180.0...188.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 62...70

Testina:

1st rack travel in: 13.50

rpm : 1245...1255 Speed

2nd rack travel in: 4.00

Speed rpm: 1405...1435 4th rack travel in: 1500 Speed

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 11...19

Testing:

Speed mqn. Minimum rack trave: 7.20 rpm : 350

Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1200 Rack travel in m: 14.50...14.60

: 650 2nd speed rpm

Rack travel in m: 11.40...11.80

Aneroid/Altitude

Compensator Test

1st version

Setting

: 1200 Speed rom hPa : 1200 Pressure

Rack travel mm : 14.50...14.60

Measurement

Speed 1/min: 1200

1st pressure hPa : -

Rack travel in m: 7.50...7.90 2nd pressure hPa : 320 Rack travel in m: 9.60...9.70

3rd pressure hPa : 860

Rack travel in m: 13.10...13.50

START CUT-OUT

1/min: 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 650 COM

Del.quantity cm3/: 165.5...171.5

1000 s: (162.5...174.5)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 86.5...90.5 1000 s: (84.5...92.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.50

rpm : 1245...1255 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 135.0...175.0

1000 s: (130.0...180.0)

Rack travel in mm : 10.70...11.70

LOW IDLE

Speed rpm

Rack travel in mm: 5.40...5.60

Del.quantity cm3/: 27.0...33.0 1000 s: (25.0...35.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: C.D.C. # 3917089

Start-of-delivery mark = 5.5° after

start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.80...4.90 Prestroke mm : (4.75...4.95) Note remarks Rack travel in mm : 15.00...16.00 : 6-2-4-1-5-3 : MAN Test sheet Firing order Edition : 14.02.92 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 736 824 Tolerance + - * : 0.50 (0.75) Injection pump Pump designation : PES6P120A720/3LS7251 Time to cyl. no. : 6 EP type number : 0 412 726 860 BEGINNING OF DELIVERY DIFFERENCE Governor : RQV300...1000PA962 Governor design. -7K betw. rack trav. m: 4.40...4.60 : 0 421 815 302 & maximum rack tra: 15.0...16.0 Governer no. Difference ° CS : 1.75...3.25 Customer-spec. information : MAN BASIC SETTING Customer : D2866LF06 1st speed rpm: 900 Engine : 309.0 Rack travel in mm : 13.50...13.60 1st version kW : 2000 Rated speed Del.quantity cm3/: 28.5...28.7 TEST BENCH REQUIREMENTS 100 s: (28.2...29.0) Test oil inlet temp. °C : 38...42 Spread cm3 : 0.5100 s: (0.9) Overflow valve : 1 419 992 198 2nd speed rpm : 300.0 Rack travel in mm : 5.2...5.6 Del.quantity cm3/ : 2.9...3.5 Inlet press., bar: 1.50 100 s: (2.6...3.8) Test nozzle holder : 1 688 901 105 cm3 : 0.8assembly Spread 100 s: (1.2) Opening : 207...210 (B) Setting of injection pump pressure, bar with governor Orifice plate diameter mm : 0,8 GUIDE SLEEVE TRAVEL 1st speed rpm : 1050 : 9.10...9.30 travel mm : 300 Test lines : 1 680 750 089 2nd speed rpm : 3.70...3.90 travel mm Outside diameter 3rd speed : 450 rpm : 4.20...4.60 x Wall thickness travel mm : 8.00x2,50x600 : 770 x Length mm 4th speed rpm : 5.80...6.20 travel mm (A) Injection pump setting values : 1350 5th speed rpm Insp. values in parentheses Set equal delivery quant. : 13.00...14.00 travel mm GUIDE SLEEVE POSITION per values

Control-lever position

Speed

Degree: -1 rpm : 1120

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Rack travel in mm : 10.80...13.40 Measurement FULL LOAD DELTY, AT FULL LOAD STOP $1/\min : 900$ Speed 1st pressure hPa : -1st version Rack travel in m: 8.80...9.00 rpm : 900 Speed Aneroid pressure h: 1200 2nd pressure hPa : 220 Del.quantity : 285.0...287.0 1000 : (282.0...290.0) Rack travel in m: 9.40...9.50 3rd pressure hPa : 720 Rack travel in m: 11.50...11.80 Spread cm3 : 5.00 1000 : (9.00) START CUT-OUT RATED SPEED 1/min: 220 (240) Speed 1st version Control Lever FUEL DELIVERY CHARACTERISTICS position degrees: 287...295 Testing: 1st version 1st rack travel in: 12.10 Aneroid pressure h: 1200 Speed rpm : 1000 Del.quantity cm3/ : 261.0...265.0 1000 s: (258.0...268.0) rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1140...1170 Speed Aneroid pressure h: 1200 4th rack travel in: 1300 : 750 rom : 0.00...1.00Speed Speed rpm Del.quantity cm3/: 271.0...277.0 1000 s: (268.0...280.0) LOW IDLE 1 Control lever Aneroid pressure h: position degrees: 243...251 Speed : 500 rpm Del.quantity cm3/: 166.0...168.0 1000 s: (163.0...171.0) Testing: Speed : 200 rom Minimum rack trave: 7.50 : 300 BREAKAWAY rom Rack travel in mm : 5.30...5.50 1st version CONSTANT REGULATION 1mm rack travel less than Speed rpm : 240...360 full load rack tr: 12.10 rpm : 1040...1350 TORQUE CONTROL Speed Dimension a mm Torque control curve - 1st version STARTING FUEL DELIVERY 1st speed rpm : 900 Rack travel in m: 13.50...13.60 d speed rom : 1000 Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0 1000 s: (206.0...234.0) 2nd speed Rack travel in m: 13.00...13.20 : 750 3rd speed rpm Rack travel in m: 12.70...12.90 : 400 LOW IDLE 4th speed rom Rack travel in m: 11.50...11.70 Speed rpm : 300
Rack travel in mm : 5.20...5.60
Del.quantity cm3/ : 29.0...35.0
1000 s: (26.0...38.0) Speed Aneroid/Altitude Compensator Test cm3 : 8.00Spread 1st version 1000 s: (12.00) Setting : 900 Speed rpm Remarks: hPa : 1200 Pressure *

Rack travel mm

: 13.50...13.60

Setting and blocking of pointer of start-of-delivery sensor on cyl. 6 start of delivery

Note remarks

Test sheet : MAN

Edition : 14.02.92

Replaces Test cil

: ISO-4113

Combination no. : 0 402 736 825

Injection pump

Pump designation : PES6P120A720/3LS7251

EP type number : 0 412 726 860

Governor

: RQV300...1000PA962-8 Governor design.

: 0 421 815 303 Governer no.

Customer-spec. information Customer : MAN

: D2866LF09 Enaine

: 309.0 : 2000 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.80...4.90 Prestroke mm

: (4.75...4.95) Rack travel in mm : 15.00...16.00

: 6- 2- 4- 1- 5- 3 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - •

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60 & maximum rack tra: 15.0...16.0 Difference * CS : 1.75...3.25

BASIC SETTING

1st speed rom: 900

Rack travel in mm : 13.90...14.00

Del.guantity cm3/: 29.9...30.1

100 s: (29.6...30.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm : 5.2...5.6 Del.quantity cm3/ : 2.9...3.5

100 s: (2.6...3.8)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050

: 9.10...9.30 travel mm

rpm : 3002nd speed

: 3.60...4.00 travel mm

: 450 3rd speed man

: 4.10...4.70 travel mm : 770

4th speed non

: 5.80...6.20 travel mm

rpm : 1350 5th speed

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1120 Speed

Rack travel in mm : 11.10...13.70 Measurement FULL LOAD DELIV. AT FULL LOAD STOP Speed 1/min : 900 1st version 1st pressure hPa : -Rack travel in m: 9.00...9.20 rpm : 900 Speed 2nd pressure hPa : 220 Rack travel in m: 9.40...9.50 Aneroid pressure h: 1200 : 299.0...301.0 Del.quantity 1000 : (296.0...304.0) 3rd pressure hPa : 720 Rack travel in m: 11.50...11.90 : 5.00 cm3 Spread 1000 : (9.00) START CUT-OUT RATED SPEED Speed 1/min : 220 (240) 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 287...295 1st version Testing: 1st rack travel in: 12.40 Aneroid pressure h: 1200 rpm : 1040...1050 rpm : 1000Speed Del.quantity cm3/: 271.0...277.0 2nd rack travel in: 4.00 1000 s: (268.0...280.0) rpm : 1140...1170 Speed Aneroid pressure h: 1200 Speed rpm : 750 4th rack travel in: 1300 rpm : 0.00...1.00 Speed Del.quantity cm3/: 281.0...287.0 1000 s: (278.0...290.0) LOW IDLE 1 Aneroid pressure h: -Control lever : 500 position degrees: 243...251 Speed rpm Del.quantity cm3/: 168.0...170.0 1000 s: (165.0...173.0) Testing: Speed : 200 rpm Minimum rack trave: 7.50 rpm : 300 **BREAKAWAY** Rack travel in mm : 5.30...5.50 1st version CONSTANT REGULATION 1mm rack travel less than rpm : 240...360 Speed full load rack tr: 12.40 TORQUE CONTROL rpm : 1040...1050 Speed Dimension a mm Torque control curve - 1st version STARTING FUEL DELIVERY st speed rpm : 900 Rack travel in m: 13.90...14.00 1st speed : 1000 2nd speed rpm Speed rpm : 100 Del.quantity cm3/: 200.0...220.0 Rack travel in m: 13.40...13.60 1000 s: (196.0...224.0) 3rd speed rpm : 750 Rack travel in m: 12.90...13.10 : 400 LOW IDLE 4th speed rpm Rack travel in m: 12.00...12.30 Speed rpm: 300 Rack travel in mm: 5.20...5.60 Aneroid/Altitude Del.quantity cm3/: 29.0...35.0 1000 s: (26.0...38.0) Compensator Test cm3 : 8.00Spread 1000 s: (12.00) 1st version Settina Speed : 900 Remarks: rpm hPa : 1200 : MAN-NR. 3-7206

Rack travel mm

: 13.90...14.00

Setting and blocking of pointer of start-of-delivery sensor on cyl. 6 start of delivery

Note remarks

Test sheet : MAN Edition : 14.02.92

Replaces :-

Test oil : ISO-4113

Combination no. : 0 402 736 826

Injection pump

Pump designation : PES6P120A720/3LS7251

EP type number : 0 412 726 860

Governor

Governor design. : RQV300...1000PA962

-9K

Governer no. : 0 421 815 304

Customer—spec. information Customer : MAN

Engine : D2866LU04

1st version kW : 309.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter

x Wall thickness

x Length mm : 8.00X2.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90

: (4.75...4.95)

Rack travel in mm : 15.00...16.00 Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 3.90...4.10 & maximum rack tra: 15.0...16.0 Difference * CS : 1.75...0.00

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 29.1...29.3

100 s: (28.8...29.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 4.7...5.1 Del.quantity cm3/ : 2.9...3.5 100 s: (2.6...3.8)

Spread cm3: 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

2nd speed rpm : 300

travel mm : 3.70...3.90 3rd speed rpm : 450

travel mm : 4.20...4.60

4th speed rpm : 770

travel mm : 5.80...6.20 5th speed rpm : 1350

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed rpm: 1110 Rack travel in mm : 12.20...14.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rom : 750 Aneroid pressure h: 1200 : 291.0...293.0 Del.quantity 1000 : (288.0...296.0) : 5.00 cm3Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 287...295 Testing: 1st rack travel in: 12.00 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1140...1170 Speed 4th rack travel in: 1300 Speed rom : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 243...251 Testing: Speed : 200 rpm Minimum rack trave: 7.50 : 300 Speed (TOM Rack travel in mm : 4.80...5.00 CONSTANT REGULATION rom : 240...360 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 750 Rack travel in m: 12.70...12.80 2nd speed rpm : 900 Rack travel in m: 13.10...13.30 3rd speed rpm : 1000 Rack travel in m: 13.00...13.20 Aneroid/Altitude Compensator Test 1st version

: 900

: 13.00...13.20

hPa : 1200

mqn.

1/min: 900 Speed 1st pressure hPa : -Rack travel in m: 8.40...8.60 2nd pressure hPa : 200 Rack travel in m: 8.70...8.80 3rd pressure hPa : 660 Rack travel in m: 11.40...11.60 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 : 1000 rom Aneroid pressure h: 1200 : 900 Speed rpm Del.quantity cm3/: 290.0...296.0 1000 s: (287.0...299.0) Aneroid pressure h: -: 500 Speed **m**gn Del.quantity cm3/: 169.0...171.0 1000 s: (166.0...174.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.00 rpm : 1040...1050 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0) LOW IDLE rpm : 300 Speed Rack travel in mm : 4.70...5.10 Del.quantity cm3/: 29.0...35.0 1000 s: (26.0...38.0) cm3 : 8.00Spread 1000 s: (12.00) Remarks: : MAN-NR. 3-7208

Setting and blocking of pointer of

start-of-delivery sensor on cyl. 6

start of delivery

Measurement

Rack travel mm

Setting

Pressure

Speed

Note remarks

Test sheet : PER 12,2 b : 21.02.92 Edition : 07.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 746 809

Injection pump

Pump designation : PES6P120A720RS7132

: \$ 412 726 806 EP type number

Governor

Governor design: : RQ750PA836 : 0 421 801 373 Governer no.

Customer-spec. information : PERKINS Customer

Engine : EAGLE LE

: 240.0 1st version kW : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.50...4.60 Prestroke mm

: (4.45...4.65)

Rack travel in mm : 9.00...12.00 : 1-4-2-6-3-5 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm: 15.90...16.00

Del.quantity cm3/: 33.9...34.1

100 s: (33.6...34.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm : 5.9...6.1 Del.quantity cm3/: 3.8...4.4 100 s: (3.5...4.7)

cm3 : 0.8 Spread 100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 339.0...341.0 Del.quantity

1000 : (336.0...344.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:

1st rack travel in: 14.90 rpm : 750...755 Speed

2nd rack travel in: 4.00

rpm : 783...798 Speed

4th rack travel in: 820

rom : 0.00...1.00Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.90 rpm : 750...755 Speed

STARTING FUEL DELIVERY

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

APPLICATION

Generator

Note remarks

: PER 12,2 d : 14.02.92 Test sheet Edition : 07.90 Replaces : ISO-4113 Test oil

: 0 402 746 835 Combination no.

Injection pump

Pump designation : PES6P120A320RS7156 : 0 412 726 813 EP type number

Governor

Governor design. : RQV250...1050PA793-2

: 0 421 813 699 Governer no.

Customer-spec. information : PERKINS Customer

: EAGLE TX 350/375 Engine

: 280.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 075 Test lines

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.50...4.60 Prestroke mm : (4.45...4.65)

Rack travel in mm : 9.00...12.00

: 1-4-2-6-3-5 Firing order

: 0-60-120-180-240-300 Phasing

Tojerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 14.20...14.30

Del.quaratity cm3/: 27.7...27.9

100 s: (27.4...28.2)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 250.02nd speed Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.3...1.7 100 s: (1.0...2.0)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed travel mm : 0.90...1.30

2nd speed rpm : 350

2.90...3.50 travel mm

rpm : 700 3rd speed

: 4.00...4.60 travel mm

rpm : 10004th speed

: 7.40...7.60 travel mm

rpm : 1100 5th speed

: 8.80...9.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1070 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed Aneroid pressure h: 1200 Del.quantity : 277.0...279.0 1000 : (274.0...282.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 13.20 rom : 980...990 Speed 2nd rack travel in: 4.00

rpm : 1080...1110 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 81...89

Testing:

Speed rpm : 100 Minimum rack trave: 7.50 : 250 Speed rpm

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 250...570 Speed |

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rom hPa : 1200 Pressure

: 14.20...14.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 12.10...12.30

2nd pressure hPa : 850

Rack travel in m: 13.80...13.90

3rd pressure hPa : 610

Rack travel in m: 12.60...12.80

START CUT-OUT

1/min: 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

F25

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 222.0...224.0 1000 s: (219.0...227.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.20

rpm : 980...990 Speed

STARTING FUEL DELIVERY

Speed rpm: 100 Del.quantity cm3/: 190.0...230.0

1000 s: (187.0...233.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Note remarks

: BAO 15,9 b3 Test sheet : 14.02.92 Edition : 07.90 Replaces Test oil : ISO-4113

: 0 402 746 880 Combination no.

Injection pump

Pump designation : PES6P120A320RS7105 : 0 412 726 800 EP type number

Governor

Governor design. : RQV350...900PA935-1

: D 421 813 820 Governer no.

Customer-spec, information Customer : BAUDOUIN

Engine : 6P15-2

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.60...3.70 Prestroke mm : (3.55...3.75) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 33.9...34.1

100 s: (33.6...34.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm: 4.5...4.9 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6) cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed : 0.70...1.00 travel mm

rpm : 500 2nd speed

travel mm : 3.10...3.80

3rd speed : 800 ngn

travel mm : 6.50...6.90

: 900 4th speed rpm

: 7.80...8.10 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1010 Speed

Rack travel in mm : 9.70...12.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

: 339.0...341.0 Del.quantity 1000 : (336.0...344.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testina:

1st rack travel in: 11.00 Speed rpm : 940...950

2nd rack travel in: 4.00

Speed rpm : 1000...1030 4th rack travel in: 1150

Speed rpm : 0.00...1.60

LOW IDLE 1 Control lever

position degrees: 80...88

Testing:

Speed rpm : 100 Minimum rack trave: 6.20 rpm : 350 Speed

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

rpm : 350...450 Speed

START CUT-OUT

1/min: 270 (290) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00 rpm : 940...950 Speed

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

APPLICATION

Navy

Note remarks

: MB 11,8 s 2 Test sheet Edition : 14.02.92 Replaces : 06.91 Test oil : ISO-4113

Combination no. : 0 402 746 906

Injection pump

Pump designation : PES6P120A720LS7196 EP type number : 0 412 726 831

Governor

: RQV450...1050PA985 Governor design.

: 0 421 813 917 Governer no.

Customer—spec. information

Customer : MERCEDES-BENZ

Engine : 0M447 h LA

1st version kW : 304.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening 1 contract 1 c

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10

: (4.95...5.15)

Rack travel in mm : 19.00...21.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 15.20...15.40

Del.quantity cm3/: 28.4...28.6

100 s: (28.1...28.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 450.0 2nd speed

Rack travel in mm: 4.0...4.6 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9) cm3 : 0.8

Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed irpm : 450

travel mm : 1.10...1.60

2nd speed rpm : 650

travel mm 3.50...4.00

3rd speed : 940 rpm

: 5.50...6.00 travel mm

4th speed : 1107 rpm

: 7.30...7.80 travel mm

5th speed : 1226 rpm

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600 Aneroid pressure h: 950 : 284.0...286.0 Del.quantity 1000 : (281.0...289.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 113...121 Testing: 1st rack travel in: 14.40 Speed rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1300 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 61...69 Testing: Speed rpm : 300 Minimum rack trave: 5.90 rpm : 450 Rack travel in mm : 4.00...4.60 CONSTANT REGULATION rpm : 450...600 Speed TORQUE CONTROL Dimension a mm : 0.60 2nd speed rpm : 1050 Rack travel in m: 15,40...15.60 : 900 3rd speed rpm Rack travel in m: 15.70...15.90 4th speed rpm : 800 Rack travel in m: 16.00...16.20 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rom hPa : 950 Pressure Rack travel mm : 15.2...15.4 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 11.3...11.5 2nd pressure hPa : 600

Rack travel in m: 13.6...13.8 3rd pressure hPa : 1200 Rack travel in m: 15.5...15.8 4th pressure hPa : -Rack travel in m: 9.8...10.2 START CUT-OUT 1/min: 370 (390) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600 Speed rpm : 1050 Del.quantity cm3/: 280.0...283.0 1000 s: (277.0...286.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1600 : 800 Speed rpm Del.quantity cm3/: 298.0...302.0 1000 s: (295.0...305.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: rpm_ : 500 Speed Del.quantity cm3/: 145.0...147.0 1000 s: (142.0...150.0) Spread cm3 : 8.001000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.40 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 280.0...300.0 1000 s: (276.0...304.0) Remarks:

Note remarks

: MB 11,8 u : 21.02.92 Test sheet Edition : 06.91 Replaces : ISO-4113 Test oil

: 0 402 746 913 Combination no.

Injection pump

Pump designation : PES6P120A720LS7237 : 0 412 726 851

EP type number

Governor

Governor design. : RQ300/1100PA1008-1 : 0 421 801 592 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M447 hA

1st version kW : 184.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 20.00...21.00 Firing order : 6-2-4-1-5-3

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm : 600 1st speed

Rack travel in mm : 12.00...12.20

Del.guantity cm3/: 16.1...16.3

100 s: (15.8...16.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 6.5...7.1 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 500

Del.quantity : 161.0...163.0

1000 : (158.0...166.0)

: 5.00 Spread cm3 1000

: (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed man Rack travel in mm : 20.0 Testing: 1st rack travel in: 12.20 Speed rpm : 1145...1160 2nd rack travel in: 4.00 rpm : 1220...1250 Speed 4th rack travel in: 1300 Speed rom : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm : 6.5 Testing: : 200 Speed rpm Minimum rack trave: 8.30 rpm : 300 Speed Rack travel in mm : 6.20...6.80 Rack travel in mm : 2.00 Speed rpm : 370...410 Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed mcgn hPa : 500 Pressure : 12.00...12.20 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 11.70...11.90
2nd pressure hPa : 700
Rack travel in m: 12.10...12.30 *
3rd pressure hPa : 1100 Rack travel in m: 12.80...13.00 4th pressure hPa : -Rack travel in m: 11.70...12.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 Speed rpm : 1100 Del.quantity cm3/: 193.0...196.0 1000 s: (190.0...199.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1400 Speed : 800 rpm Del.quantity cm3/: 195.0...199.0 1000 s: (192.0...202.0) cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: Speed rpm : 500
Del.quantity cm3/ : 139.0...141.0
1090 s: (136.0...144.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.20 Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

:

Note remarks

Test sheet

: MB 11,8 u 1

Edition Replaces : 21.02.92

Test oil

: 07.91 : ISO-4113

Combination no.

: 0 402 746 916

Injection pump

Pump designation : PES6P120A720LS7237

EP type number

: 0 412 726 851

Governor

Governor design: : RQ300/1100PA1010

Governer no.

: 0 421 801 596

Customer-spec. information

Customer

: MERCEDES-BENZ

Engine

: 0M447 hA

1st version kW

: 184.0

Rated speed

: 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly

: 1 688 901 105

Opening

pressure, bar

: 207...210

Orifice plate diameter mm

: 0,8

Test Lines

: 1 680 750 075

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30

Rack travel in mm : 20.00...21.00 Firing order : 6-2-4-1-5-3

: (5.15...5.35)

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed

rpm: 600

Rack travel in mm : 12.00...12.20

Del.quantity cm3/: 16.1...16.3

100 s: (15.8...16.6)

Spread

cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm : 5.8...6.4 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread

cm3 : 0.8100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 500 Del.quantity : 101.0...166.0)

: 5.00

Spread

Speed

cm3 : (9.00)

1000

RATED SPEED

1st version

Setting point:

: 600

Rack travel in mm: 20.0

rpm

Testing: 1st rack travel in: 12.20 rpm : 1145...1160 2nd rack travel in: 4.00 rpm : 1220...1250 Speed 4th rack travel in: 1300 Speed rpm: 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring rpm Rack travel in mm: 6.1 Testing: Speed : 200 rpm Minimum rack trave: 8.00 : 300 rpm Rack travel in mm : 5.80...6.40 Rack travel in mm : 2.00 Speed rpm : 390...430 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 500 Pressure : 12.00...12.20 Rack travel mm Measurement Speed $1/\min : 600$ 1st pressure hPa : 300 Rack travel in m: 11.70...11.90 2nd pressure hPa : 700 Rack travel in m: 12.10...12.30 3rd pressure hPa : 1100 Rack travel in m: 12.80...13.00 4th pressure hPa Rack travel in m: 11.70...12.00 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 : 1100 Speed rpm Del.quantity cm3/: 193.0...196.0 1000 s: (190.0...199.0)

cm3 : 8.00

Aneroid pressure h: 1400

rpm

1000 s: (12.0)

: 800

Del.quantity cm3/: 195.0...199.0 1000 s: (192.0...202.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 139.0...141.0 1000 s: (136.0...144.0) Spread cm3 : 8.00 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.20 Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0 1009 s: (206.0...234.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Spread

Speed

Note remarks

Test sheet : MB 11,8 t 2 : 14.02.92 Edition

: 07.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 746 918

Injection pump

Pump designation : PES6P120A720LS7238

EP type number : 0 412 726 852

Governor

Governor design. : RQ300/1100PA1013

Governer no. : 0 421 801 599

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M447 hLA

1st version kW : 220.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar = 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 6-2-4-1-5-3

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 21.3...21.5

100 s: (21.0...21.8)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm : 6.0...6.6 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 600 Del.quantity

: 213.0...215.0 1000 : (210.0...218.0)

: 5.00 cm3 Spread

: (9.00) 1000

RATED SPEED

1st version

Setting point: Speed : 600 man Rack travel in mm : 20.0

Testing: 1st rack travel in: 13.60 rpm : 1145...1160 2nd rack travel in: 4.00 rpm : 1230...1260 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rpm Rack travel in mm: 6.3 Testing: Speed : 200 rpm Minimum rack trave: 8.20 : 300 rpm Rack travel in mm : 6.00...6.60 Rack travel in mm : 2.00 Speed rpm : 380...420 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm Pressure hPa : 600 Rack travel mm : 14.00...14.20 Measurement 1/min: 600 Speed 1st pressure hPa : 200 Rack travel in m: 12.20...12.40 2nd pressure hPa : 400 Rack travel in m: 13.60...13.80 3rd pressure hPa : 800 Rack travel in m: 14.20...14.40 4th pressure hPa Rack travel in m: 11.50...11.80 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 : 1100 rom Del.quantity cm3/: 229.0...232.0 1000 s: (226.0...235.0) : 8.00 Spread cm31000 s: (12.0) Aneroid pressure h: 1400

: 700

rpm

Del.quantity cm3/: 233.0...237.0 1000 s: (230.0...240.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 148.0...150.0 1000 s: (145.0...153.0) Spread cm3 : -1900 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.60 Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0 1000 s: (216.0...244.0)

•

Remarks:

Speed

Note remarks

Test sheet : BAO 15,9 d : 14.02.92 Edition Replaces : 09.91 Test oil : ISO-4113

: 0 402 746 929 Combination no.

Injection pump

Pump designation : PES6P120A320RS7241 : 0 412 726 854 EP type number

Governor

: RQV350...900PA935-1 Governor design.

: 0 421 813 820 Governer no.

Customer-spec, information Customer : BAUDOUIN

: 6P15 2F Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2,50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.60...3.70 Prestroke mm : (3.55...3.75) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 33.9...34.1

100 s: (33.6...34.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.02nd speed Rack travel in mm: 4.7...5.1 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 945 1st speed

: 8.40...8.60 travel mm rpm : 350

2nd speed travel mm

: 1.30...1.70 rpm : 550 3rd speed

travel mm

: 3.60...4.20 : 750 4th speed rpm : 5.90...6.30 travel mm

: 1200 5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1010 Speed

Rack travel in mm : 9.70...12.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

: 339.0...341.0 Del.quantity 1000 : (336.0.,.344.0)

: 5.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version Control Lever

position degrees: 119...127

Testina:

1st rack travel in: 11.00 rpm : 940...950 Speed 2nd rack travel in: 4.00

rpm : 1000...1030 Speed

4th rack travel in: 1150 rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 83...91

Testing:

Speed rpm: 100 Minimum rack trave: 6.40 rpm : 350 Speed Rack travel in mm : 4.80...5.00

Rack travel in mm: 2.00

CONSTANT REGULATION

rpm : 350...450 Speed

START CUT-OUT

1/min: 270 (290) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00 Speed rpm : 940...950 Speed

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

Test sheet : MB 11,8 u 3 : 21.02.92 Edition : 09.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 746 923

Injection pump

Pump designation : PES6P120A720LS7237 : 0 412 726 851 EP type number

Governor

Governor design. : R0300/1100PA1013-2

: 0 421 801 611 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M447 hA Engine

1st version kW : 184.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-2-4-1-5-3

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.00...12.20

Del.guantity cm3/: 16.1...16.3

100 s: (15.8...16.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 5.6...6.2

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.8 Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 500

: 161.0...163.0 Del.quantity 1000 : (158.0...166.0)

: 5.00 cm3

> : (9.00) 1000

RATED SPEED

Spread

1st version

Setting point:

Speed Rack travel in mm: 20.0

Testing: 1st rack travel in: 12.20 rpm : 1145...1160 2nd rack travel in: 4.00 rpm : 1220...1250 Speed 4th rack travel in: 1300 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.9 Testing: : 200 Speed rpm Minimum rack trave: 7.80 : 300 rpm Rack travel in mm: 5.60...6.20 Rack travel in mm: 2.00 Speed rpm: 370...410 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 500 Pressure : 12.00...12.20 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 11.70...11.90 2nd pressure hPa : 700 Rack travel in m: 12.10...12.30 3rd pressure hPa : 1100 Rack travel in m: 12.80...13.00 4th pressure hPa : -Rack travel in m: 11.70...12.00 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 rpm : 1100 Speed Del.quantity cm3/: 193.0...196.0

1000 s: (190.0...199.0)

cm3 : 8.00 1000 s: (12.0)

: 800

Aneroid pressure h: 1400

rpm

Del.quantity cm3/: 195.0...199.0 1000 s: (192.0...202.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 139.0...141.0 1000 s: (136.0...144.0) cm3 : 8.00 Spread 1000 s: (12.0) BREAKAWAY 1st version imm rack travel less than full load rack tr: 12.20 rpm : 1145...1160 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0) Remarks: * Increase in control-rod travel with respect to setting at least 0.1 mm

Spread

Speed

Note remarks

Test sheet : UNI

Edition : 21.02.92

Replaces

Test oil : ISO-4113

: 0 402 746 926 Combination no.

Injection pump

Pump designation : PES6P120A720RS7224

EP type number : 0 412 726 840

Governor

: RQ275/1050PA1021 Governor design.

: 0 421 801 623 Governer no.

Customer-spec. information Customer : IVECO-UNIC

: 8460.41.721 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 33...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.10...5.20 Prestroke mm : (5.05...5.25)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 18.8...19.0

100 s: (18.5...19.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 275.0 2nd speed Rack travel in mm: 4.8...5.2 Del.quantity cm3/: 2.0...2.6

100 s: (1.7...2.9) cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 900

: 188.0...190.0 Del.quantity 1000 : (185.0...193.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 20.0

Testing:

1st rack travel in: 9.80

rpm : 1095...1110 Speed

2nd rack travel in: 4.00

rpm : 1170...1200 Speed

4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring : 275 Speed Speed rpm : 275 Rack travel in mm : 5.0 Testina: rpm : 100 Speed Minimum rack trave: 6.50 Speed rpm : 275 Rack travel in mm : 4.90...5.10 Rack travel in mm: 2.00 rom : 335...375 Speed TORQUE CONTROL Dimension a mm : -Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 10.80...10.90 2nd speed rpm : 550 Rack travel in m: 10.80...11.00 Aneroid/Altitude Compensator Test 1st version Setting : 850 Speed COM hPa : 900 Pressure : 10.80...10.90 Rack travel mm Measurement 1/min: 850 Speed 1st pressure hPa : -Rack travel in m: 7.30...7.50 2nd pressure hPa : 430 Rack travel in m: 9.90...10.00 3rd pressure hPa : 250 Rack travel in m: 8.20...8.40 START CUT-OUT Speed 1/min : 215 (235) FUEL DELIVERY CHARACTERISTICS

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.80 Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 130.0...160.0 1000 s: (126.0...154.0)

LOW IDLE

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Speed

1st version

Aneroid pressure h: 900

Aneroid pressure h: -

Speed rpm : 550 Del.quantity cm3/: 218.0...224.0

rpm : 500

Del.quantity cm3/: 126.0...128.0 1000 s: (123.0...131.0)

1000 s: (215.0...227.0)

Note remarks

Test sheet : UNI

: 21.02.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 927

Injection pump

Pump designation : PES6P120A720RS7224

EP type number : 0 412 726 840

Governor

: RQ275/1050PA1021-1 Governor design.

: 0 421 801 624 Governer no.

Customer-spec. information

: IVECO-UNIC Customer

: 8460.41.731 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.10...5.20 Prestroke mm

: (5.05...5.25)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 22.2...22.4

100 s: (21.9...22.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed

Rack travel in mm: 4.8...5.2 Del.quantity cm3/: 2.0...2.6

100 s: (1.7...2.9)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1200

Del.quantity : 222.0...224.0 1000 : (219.0...227.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

rpm : 600 Speed Rack travel in mm: 20.0

Testing:

1st rack travel in: 11.70

rpm : 1095...1110 Speed

2nd rack travel in: 4.00

rpm : 1190...1220 Speed

4th rack travel in: 1350

rom : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 275 Rack travel in mm: 5.0

Testing:

Speed : 100 rpm Minimum rack trave: 6.50 rpm : 275 Speed

Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00 Speed rpm : 335...375

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 12.70...12.80

2nd speed rpm : 550 Rack travel in m: 12.70...12.90

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 850 rom hPa : 1200 Pressure

: 12.70...12.80 Rack travel mm

Measurement

1/min: 850 Speed

1st pressure hPa : -

Rack travel in m: 7.50...7.70

2nd pressure hPa : 580

Rack travel in m: 11.30...11.40 3rd pressure hPa : 290

Rack travel in m: 8.60...9.00

START CUT-OUT

1/min: 215 (235) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 550 Speed COM

Del.quantity cm3/: 266.0...274.0 1000 s: (263.0...277.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 126.0...128.0 1000 s: (123.0...131.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 1095...111D Speed

STARTING FUEL DELIVERY

Speed rom : 100

Del.quantity cm3/: 130.0...160.0 1000 s: (126.0...164.0)

LOW IDLE

rpm : 275 Speed

Rack travel in mm : 4.80...5.20 Del.quantity cm3/: 20.0...26.0 1000 s: (17.0...29.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

: MAC Test sheet

: 14.02.92 Edition

Replaces

: ISO-4113 Test oil

: 0 402 746 930 Combination no.

Injection pump

Pump designation : PES6P120A720RS7157

: 0 412 726 814 EP type number

Governor

Governor design.: RQV325...900PA909-5K

: 0 421 815 305 Governer no.

Customer-spec. information

: MACK TRUCKS Customer

: EV7-390 Eigine

: 291.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 2 417 413 013

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

assembly : 1 688 901 101

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test Lines

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm

: 2.75...2.85 : (2.70...2.90)

Rack travel in mm: 10.50

: 1-5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpa : 900 1st speed

Rack +ravel in mm : 15.70...15.80

Del.quantity cm3/: 27.1...27.3

100 s: (26.8...27.6)

cm3 : 0.5Spread

100 st (0.9)

rpm : 325.0 2nd speed

Rack travel in mm: 5.1...5.3

Del.quantity cm3/: 4.0...4.6

100 s: (3.8...4.8)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed : 1.20...1.40 travel mm

rpm : 450 2nd speed

: 2.80...3.20 travel mm

rpm : 650 3rd speed

: 5.60...5.80 travel mm rpm : 900 4th speed

: 8.30...8.50 travel mm

: 1100

5th speed rpm

: 10.30...10.80 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

Aneroid pressure h: 1200

: 271.5...273.5 Del.quantity

1000 : (268.5...276.5)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 58...66

Testina:

1st rack travel in: 14.70 : 940...970 Speed rom

2nd rack travel in: 4.00

: 1130...1140 Speed rom 4th rack travel in: 1200

rom : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 7...15

Testing:

Speed rpm Minimum rack trave: 6.30 beac2 : 325 rpm

Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 15.70...15.80

2nd speed : 625 rpm

Rack travel in m: 15.10...15.50

rpm : 500 3rd speed

Rack travel in m: 0.00...13.60

Aneroid/Altitude Compensator Test

1st version Setting

: 900 Speed nom hPa : 1200 Pressure

Rack travel mm : 15.70...15.80

Measurement

1/min: 900 Speed

1st pressure hPa : -

Rack travel in m: 8.50...8.90

2nd pressure hPa : 325

Rack travel in m: 10.20...10.30

3rd pressure hPa : 790

Rack travel in m: 13.80...14.20

START CUT-OUT

1/min: 275 (285) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed : 625 rpm

Del.quantity cm3/: 300.0...306.0 1000 s: (297.0...309.0)

cm3 : 8.00 Spread

1000 s: (12.0)

850 Speed rom

Del.quantity cm3/: 159.0...161.0 * 1000 s: (136.5...157.0)

Aneroid pressure h: -

rpm : 400 Speed

Del.quantity cm3/: 157.5...161.5 1000 s: (155.5...163.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.70

rpm : 940...970 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 190.0...230.0

1000 s: (180.0...240.0)

Rack travel in mm : 10.80...11.40

LOW IDLE

Speed rpm : 325

Rack travel in mm : 5.10...5.30 Del.quantity cm3/: 40.0...46.0

1000 s: (38.0...48.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P34

Bow dimension:

Sliding-sleeve position = 37.0 mm * This test specification applies only to the engine/nozzle-and-holder assemblies on an injection pump test bench: setting for test equipment, check value for engine equipment.

Note remarks

Test sheet : RVI Edition : 28.02.92

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 746 931

Injection pump

Pump designation : PES6P120A320RS7236 EP type number : 0 412 726 848

Governor

Governor design. : RQV275...1000PA1001-

2

Governer no. : 0 421 813 989

Customer-spec. information Customer : RVI

Engine : MIDR 063540 N/3

1st version kW : 283.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60 : (4.45...4.65)

Rack travel in mm : 18.00...21.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.2...13.3

Del.quantity cm3/: 28.2...28.4

100 s: (27.9...28.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 4.9...5.1 Del.quantity cm3/ : 2.7...3.1

100 s: (2.4...3.4) Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1080 travel mm : 8.40...8.60

2nd speed rpm : 275

travel mm : 1.20...1.40

3rd speed rpm : 490

travel mm : 3.50...4.10

4th speed rpm : 775

travel mm : 5.90...6.30

5th speed rpm : 1450

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Speed Degree: -1 speed rpm : 1165

Rack travel in mm : 11.90...13.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 600 Aneroid pressure h: 1000

: 282.0...284.0 10**0**0 : (279.0...287.0) Del.quantity

cm3 : 5.00 1000 : (9.00) Spread

PATED SPEED

1st version Control lever

position degrees: 297...305

Testing:

1st rack travel in: 12.20

Speed rpm : 1065...1075 2nd rack travel in: 4.00

Speed rpm : 1190...1220 4th rack travel in: 1350

rom : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 243...251

Testing:

rpm : 200 Speed Minimum rack trave: 6.10 Speed LDU!

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

rpm : 310...420 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed roin. hPa : 1000 Pressure

Rack travel mm : 13.20...13.30

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.40...9.60

2nd pressure hPa : 480

Rack travel in m: 12.30...12.40

3rd pressure hPa : 240

Rack travel in m: 10.10...10.50

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

G19

Aneroid pressure h: 1000

Speed rpm : 1000 Del.quantity cm3/: 260.0...266.0

1000 s: (257.0...269.0)

Aneroid pressure h: -

rpm : 500 Speed

Dec.quantity cm3/: 166.0...168.0 1000 s: (163.0...171.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20

rpm : 1065...1075 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 145.0...175.0

1000 s: (141.0...179.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 27.0...31.0

1000 s: (24.0...34.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

Test sheet : DEE 7,7 n : 14.02.92 Edition : 11.91 Replaces : ISO-4113 Test oil

Combination no. : 0 402 776 808

Injection pump

Pump designation : PES6P120A720RS7223

: D 412 726 843 EP type number

Governor

Governor design. : RSV400...1050P0A547

: 0 421 833 349 Governer no.

Customer-spec. information Customer : JOHN DEERE

Engine : 6101 HZ010

1st version kW : 241.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 075

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 140...150

Test nozzle holder

assembly : 1 688 901 103

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.7

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X3.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.55...3.65 Prestroke mm

: (3.50...3.70)
Rack travel in mm : 9.00...12.00
Firing order : 1-5- 3- 6- 2- 4

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

riom: 1050 1st speed

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 22.4...22.6

100 s: (22.1...22.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 400.02nd speed Rack travel in mm : 6.0...6.2 Del.quantity cm3/ : 2.1...2.7

100 s: (1.9...2.9)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 1200

: 224.5...226.5 Del.quantity

1000 : (221.5...229.5)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 42...50

Testina:

1st rack travel in: 11.70

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rom : 1155...1165 Speed

3rd rack travel in: 4.00

Speed rpm : 1155...1185 4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control Lever

position degrees: 22...30

Setting point w/out bumper spring

: 400 rpm

Rack travel in mm : 5.6

Testina:

rpm : 100 Speed

Minimum rack trave: 19.00

: 400 Speed rom

Rack travel in mm : 6.00...6.20

TORQUE CONTROL

Torque control curve – 1st version

1st speed rom : 1050

Rack travel in m: 12.70...12.80

: 850 2nd speed rpm

Rack travel in m: 13.20...13.40

Ameroid/Altitude

Compensator Test

1st version

Setting Speed

: 500 rpm

hPa : 1200 Pressure

Rack travel mm : 13.20...13.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.60...10.80

2nd pressure hPa : 290
Rack travel in m: 11.30...11.40
3rd pressure hPa : 620
Rack travel in m: 12.50...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

rpm : 850 Speed

Del.quantity cm3/: 238.0...244.0 1000 s: (235.0...247.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 145.0...149.0

1000 s: (143.0...151.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

: 100 Speed rom

Del.quantity cm3/: 85.0...125.0

1000 s: (80.0...130.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 6.00...6.20

Del.quantity cm3/: 21.5...27.5 1000 s: (19.5...29.5)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Adjustment without torque-control E47014 spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

Note remarks

Test sheet : VOL 7,1 f : 14.02.92 Edition Replaces : 11.91 : ISO-4113 Test oil

: 0 402 846 050 Combination no.

Injection pump

Pump designation: PE6P110A320RS8009 : 0 412 816 010 EP type number

Governor

: RQV250...1200PA953K : 0 421 815 996 Governor design.

Governer no.

Customer-spec, information

Customer : VOLVO-TRUCK

Engine : TD73EB

1st version kW : 187.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 064

Inlet press., bar: 2.50

Test nozzle holder

assembly : 1 688 901 101

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90

: (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

: 0.30 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.10...12.20

Del.guantity cm3/: 19.6...19.8

100 s: (19.4...20.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 4.7...5.1 Del.quantity cm3/: 2.1...2.5 100 s: (1.8...2.8)

cm3 : 0.7Spread 100 s: (1.1)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rom : 250 1st speed : 1.10...1.50 travel mm

rpm : 400 2nd speed : 3.00...3.60 travel mm

rpm : 850 3rd speed

: 6.70...7.30 travel mm

: 1250 4th speed rpm

: 10.30...10.50 travel mm

rpm : 1350 5th speed

travel mm : 11.40...11.80

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1240

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 1200 Del.quantity : 196.0...198.0 1000 : (194.0...200.0) : 5.00 Spread cm31000 : (9.00) RATED SPEED 1st version Control lever position degrees: 117...125 Testing: 1st rack travel in: 11.30 Speed rpm : 1260...1270 2nd rack travel in: 4.00 rpm : 1350...1380 Speed 4th rack travel in: 1450 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 69...77 Testina: : 100 Speed rpm Minimum rack trave: 6.40 Speed COM Rack travel in mm : 4.70...4.90 CONSTANT REGULATION rpm : 300...450 Speed TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version rpm : 700 1st speed Rack travel in m: 12.10...12.20 rpm : 1200 2nd speed Rack travel in m: 12.30...12.50 3rd speed rpm : 850 Rack travel in m: 12.20...12.50 : 350 4th speed rpm Rack travel in m: 10.60...10.90 Aneroid/Altitude Compensator Test 1st version Setting rpm : 1200 hPa : 1200 : 1200 Speed Pressure : 12.30...12.50 Rack travel mm Measurement 1/min: 1200 Speed 1st pressure hPa : -Rack travel in m: 7.30...7.50 2nd pressure hPa : 90

Rack travel in m: 7.50...7.60 3rd pressure hPa : 870 Rack travel in m: 11.70...11.90 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 1200 Speed Del.quantity cm3/: 165.0...169.0 1000 s: (162.0...172.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm_ : 700 Speed Del.quantity cm3/: 99.0...101.0 1000 s: (96.0...104.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.30 rpm : 1260...1270 Speed LOW IDLE rpm : 300 Rack travel in mm : 4.70...4.90 Remarks:

Note remarks

: VOL 7,1 f 1 Test sheet : 14.02.92 Edition : 11.91 Replaces Test oil : ISO-4113

: 0 402 846 051 Combination no.

Injection pump

Pump designation : PE6P110A32GRS8CO9 EP type number : 0 412 816 010

Governor

: RQV250...1200PA953 Governor design.

-1K

: 0 421 815 995 Governer no.

Customer-spec. information

: VOLVO-TRUCK Customer

: TD73EA Engine

: 160.0 1st version kW : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 064

Inlet press., bar: 2.50

Test nozzle holder

assembly : 1 688 901 101

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.80...3.90 : (3.75...3.95) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

: 0.30 (0.75) Tolerance + - *

Time to cyl. no.

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 10.20...10.30

Del.guantity cm3/: 15.9...16.1

100 s: (15.7...16.3)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm : 4.7...5.1 Del.quantity cm3/ : 2.1...2.5 100 s: (1.8...2.8)

cm3 : 0.7Spread

100 s: (1.1)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250 : 1.10...1.50 travel mm

rpm : 400 2nd speed

: 3.00...3.60 travel mm : 850 3rd speed rom

: 6.70...7.30 travel mm

: 1250 4th speed rpm

: 10.30...10.50 travel mm

: 1350 5th speed rpm

: 11.40...11.80 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1240 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 1200 : 159.0...161.0 Del.quantity 1000

: (157.0...163.0)

cm3 : 5.00 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 10.10

Speed rpm : 1260...1270 2nd rack travel in: 4.00

Speed rpm : 1330...1360

4th rack travel in: 1450

nom : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 69...77

Testina:

Speed MC Minimum rack trave: 6.40 rpm : 300 Speed

Rack travel in mm: 4.70...4.90

CONSTANT REGULATION

rpm : 300...450 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 700

Rack travel in m: 10.20...10.30

2nd speed rpm : 1200

Rack travel in m: 11.10...11.30

3rd speed rpm : 1100 Rack travel in m: 11.00...11.30

4th speed rpm : 350

Rack travel in m: 9.40...9.70

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 1200 rpm hPa : 1200 Pressure

Rack travel mm : 11.10...11.30

Measurement

1/min: 1200 Speed

1st pressure hPa : -

Rack travel in m: 7.30...7.50

2nd pressure hPa : 90

Rack travel in m: 7.50...7.60

3rd pressure hPa : 670

Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

rpm : 1200 Speed

Del.quantity cm3/: 146.0...150.0

1000 s: (143.0...153.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/ : 99.0...101.0

1000 s: (96.0...104.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1260...1270

LOW IDLE

: 300 Speed rom

Rack travel in mm : 4,70...4.90

Remarks:

Note remarks

Test sheet : MB6,1I : 21.02.92 Edition : 12.91 Replaces : ISO-4113 Test oil

Combination no. : 0 403 246 031

Injection pump

Pump designation : PES6MW100/720RS1515

EP type number : 0 413 206 013

Governor

Governor design. : RQV300...1300MW125-1

: 0 420 083 258 Governer no.

Customer-spec, information Customer : MB-NFZ

: 0M366LA Engine

1st version kW : 127.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 089 Test lines

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 21.00...0.00

: 1-5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

rpm : 13001st speed

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 10.8...11.0

100 s: (10.6...11.2)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 4.2...4.4 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6) cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed

Aneroid pressure h: 1000 Del.quantity: 108.0...110.0 1000 : (106.0...112.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 108...116

Testing:

1st rack travel in: 11.30 Speed rpm : 1340...1350

2nd rack travel in: 4.00

rpm : 1440...1470

Speed

4th rack travel in: 1550 rpm : 0.00...1.00

Speed

LOW IDLE 1

Control lever

position degrees: 68...76

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 4.3

Testing:

: 200 Speed rpm Minimum rack trave: 6.00

: 300 rpm

Rack travel in mm : 4.20...4.40

Ameroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm

hPa : -Pressure

: 9.70...9.80 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 300 Rack travel in m: 10.70...10.90

2nd pressure hPa : 500

Rack travel in m: 12.00...12.20

3rd pressure hPa : 1000

Rack travel in m: 12.40...12.50

START CUT-OUT

1/min: 180 (200) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 750 bel.quantity cm3/ : 103.5...106.5

1000 s: (101.0...109.0) cm3 : 5.00

Spread 1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 43.0...45.0 1000 s: (41.0...47.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 115.0...125.0

1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 4.20...4.40 Del.quantity cm3/: 10.0..14.0 1000 s: (7.5..16.5) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

G27

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks : MB 6,1 I 1 : 28.02.92 : 0-60-120-180-240-300 Test sheet Phasing Edition : 12.91 Tolerance + - ° : 0.50 (0.75) Replaces Test oil : ISO-4113 BASIC SETTING Combination no. : 0 403 246 032 1st speed rpm: 1300 Injection pump Pump designation : PES6MW100/720RS1515 Rack travel in mm : 12.30...12.40 EP type number : 0 413 206 013 Del.quantity cm3/: 10.8...11.0 Governor Governor design. : RQV300...1300MW125-2 : 0 420 083 259 100 s: (10.6...11.2) Governer no. Customer-spec. information Spread cm3 : 0.3Customer : MB-NFZ 100 s: (0.6) : 0M366LA Engine 2nd speed rpm : 300.0Rack travel in mm: 4.2...4.4 1st version kW : 142.0 Del.quantity cm3/ : 1.0...1.4 : 2600 Rated speed 100 s: (0.7...1.6) TEST BENCH REQUIREMENTS cm3 : 0.3Spread 100 s: (0.5) Test oil : 38...42 GUIDE SLEEVE POSITION inlet temp. °C Control-lever position Overflow valve Degree: -1 rpm : 1350 : 1 419 992 198 Speed Rack travel in mm : 15.20...17.80 Inlet press., bar: 1.50 FULL LOAD DELIV. AT FULL LOAD STOP Test nozzle holder : 0 681 343 009 assembly 1st version Speed rpm : 1300 Aneroid pressure h: 1100 Opening : 108.0...110.0 pressure, bar : 172...175 Del.quantity 1000 : (106.0...112.0) cm3 : 3.50 Spread : (6.00) Test Lines : 1 680 750 089 1000 Outside diameter RATED SPEED x Wall thickness x Length mm : 8.00x2.50x600 1st version Control lever (A) Injection pump setting values position degrees: 110...118 Insp. values in parentheses Set equal delivery quant. Testing: 1st rack travel in: 11.30 per values rpm : 1340...1350 Speed 2nd rack travel in: 4.00 BEGINNING OF DELIVERY rpm : 1420...1450 Test pressure, bar: 30...32 Speed 4th rack travel in: 1550 : 5.20...5.30 rpm : 0.00...1.00

Speed

LOW IDLE 1

Prestroke mm

: (5.15...5.35)

Rack travel in mm : 21.00...0.00

Control lever position degrees: 72...80 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 4.3 Testing: Speed : 200 rpm Minimum rack trave: 6.00 Speed rpm : 300 Rack travel in mm : 4.20...4.40 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : -Pressure : 8.90...9.00 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : 300 Rack travel in m: 10.70...10.90 2nd pressure hPa : 500 Rack travel in m: 11.90...12.10 3rd pressure hPa : 1100 Rack travel in m: 12.30...12.40 START CUT-OUT Speed 1/min : 180 (200) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed rpm : 750 Del.quantity cm3/ : 103.5...106.5 1000 s: (101.0...109.0) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 41.0...43.0 1000 s: (39.0...45.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.30 Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 115.0...125.0 1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.20...4.40
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

:

Remarks:

Note remarks

Test sheet : MB

Edition : 28.02.92

Replaces

Test oil : ISO-4113

Combination ro. : 0 403 246 033

Injection pump

Pump designation : PES6MW100/720RS1511

EP type number : 0 413 206 011

Governor

Governor design. : RQV300...1300MW125

: 0 420 083 257 Governer no.

Customer—spec. information Customer : MB-NFZ

: 0M366LA Engine

1st version kW : 156.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 089

Outside diameter

x Wall thickness

x Length mm : 8.00X2.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 21.00...0.00

: 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

Firing order

rpm: 1300 1st speed

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 11.8...12.0

100 s: (11.6...12.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 4.1...4.3 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6)

cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1350 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed

Aneroid pressure h: 1100

Del.quantity : 118.0...120.0 1000 : (116.0...122.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 110...118

Testing:

1st rack travel in: 11.60

rpm : 1340...1350 Speed

2nd rack travel in: 4.00

rpm : 1440...1470 Speed

4th rack travel in: 1550

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever position degrees: 72...80 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 4.2 Testing: Speed : 200 rpm Minimum rack trave: 6.00 rpm : 300 Speed Rack travel in mai: 4.10...4.30 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed man hPa : -Pressure : 7.10...7.20 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : 300 Rack travel in m: 8.80...9.00 2nd pressure hPa : 500 Rack travel in m: 10.10...10.30 3rd pressure hPa : 1100 Rack travel in m: 12.60...12.70 START CUT-OUT Speed 1/min : 180 (200) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed rpm : 750 Del.quantity cm3/: 111.5...114.5 1000 s: (109.0...117.0) Spread cm3 : 5.001000 s: (7.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 41.0...43.0 1000 s: (39.0...45.0)

BREAKAWAY

1st version 1mm rack travel less than full load rack tr: 11.60 rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 115.0...125.0 1000 s: (112.0...128.0)

LOW IDLE

: 300 Speed r*pm Rack travel in mm : 4.10...4.30 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) cm3 : 3.50 1000 s: (5.50) Spread

.

Remarks:

Note remarks

: MAN Test sheet

: 14.02.92 Edition

Replaces : ISO-4113 Test oil

Combination no. : 0 403 256 005

Injection pump

Pump designation : PES6MW100/321RS1516

EP type number : 0 413 206 014

Governor

Governor design: RQ250/1200MW84-9

: 0 420 082 064 Governer no.

Customer-spec. information : MAN Customer

Engine : D 0826 LF08

: 169.0 1st version kW : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 12.60...12.70

Del.guantity cm3/: 14.4...14.6

100 s: (14.2...14.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 250.0 2nd speed Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 1.7...2.1 100 s: (1.4...2.3)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

> Degree: 108 rpm : 600

Speed Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Aneroid pressure h: 1000

: 144.0...146.0 Del.quantity 1000 : (142.0...148.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 100...108

Setting point:

rpm Rack travel in mm: 15.5

Testing:

1st rack travel in: 11.30

rpm : 1245...1260 Speed

2nd rack travel in: 4.00 rpm : 1310...1340 Speed 4th rack travel in: 1400 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 5.5 Testing: Speed rom : 100 Minimum rack trave: 7.00 rpm : 250 Rack travel in mm : 5.40...5.60 CONSTANT REGULATION rpm : 330...420 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.50...12.60 2nd speed rpm : 600 Rack travel in m: 12.70...12.90 3rd speed rpm : 800 Rack travel in m: 12.70...12.90 4th speed rpm : 1200 Rack travel in m: 12.20...12.40 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 220 Pressure Rack travel mm : 9.90...10.00 Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.60...9.70 2nd pressure hPa : 600 Rack travel in m: 11.60...11.90 3rd pressure hPa : 1000 Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 600 Del.quantity cm3/: 149.0...152.0 1000 s: (146.5...154.5)

Spread cm3 : 5.001000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 31.0...83.0 1000 s: (79.0...85.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.30 rpm : 1245...1260 Speed

STARTING FUEL DELIVERY

rpm : 100 Del.quantity cm3/: 60.0...80.0 1000 s: (57.0...83.0)

LOW IDLE

rpm : 250 Speed Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 17.0...21.0 1000 s: (14.5...23.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

: MAN #3-7194

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Note remarks

Test sheet : MAN

Edition : 14.02.92

Replaces

: ISO-4113 Test oil

Combination no. : 0 403 256 006

Injection pump

Pump designation : PES6MW100/321RS1516

: 0 413 206 014 EP type number

Governor

Governor design. : RQV250...1200MW83-2

: 0 420 083 216 Governer no.

Customer-spec. information : MAN

Customer

: D 0826 LF08

1st version kW : 169.0

: 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

Engine

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina .

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 6-60-120-180-240-300 Phasina

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 14.4...14.6

100 s: (14.2...14.8)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 250.0
Rack travel in mm : 5.4...5.6
Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250

10.50...10.60 travel mm

rpm : 810 2nd speed

: 5.90...6.10 travel mm

: 500 3rd speed rpm

: 3.70...4.30 travel mm

: 250 4th speed rpm

travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Aneroid pressure h: 1000 Aneroid Del.quantity 1000

: 144.0...146.0

: (142.0...148.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 120...128

Testing: 1st rack travel in: 11.50 rpm : 1245...1260 2nd rack travel in: 4.00 rpm : 1310...1340 Speed 4th rack travel in: 1400 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring rpm : 250 Speed Rack travel in mm : 5.5 Testing: Speed rpm : 100 Minimum rack trave: 7.00 rpm : 250 Rack travel in mm : 5.40...5.60 CONSTANT REGULATION rpm : 330...420 Speed TORQUE CONTROL Torque control curve - 1st version st speed rpm : 1000 Rack travel in m: 12.50...12.60 1st speed rpm : 600 2nd speed Rack travel in m: 12.70...12.90 3rd speed rpm : 800 Rack travel in m: 12.70...12.90 4th speed rpm : 1200 Rack travel in m: 12.20...12.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 mon hPa : 220 Pressure Rack travel mm : 9.90...10.00 Measurement Speed 1/min : 500 1st pressure hPa : -Rack travel in m: 9.60...9.70 2nd pressure hPa : 600 Rack travel in m: 11.60...11.90 3rd pressure hPa : 1000 Rack travel in m: 12.70...12.90 FUEL DELIVERY CHARACTERISTICS 1st version

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.50 Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 60.0...80.0 1000 s: (57.0...83.0)

LOW IDLE

Remarks:

: MAN #7-7195

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Aneroid pressure h: 1000

Note remarks

: CUM 8,3 0 3 Test sheet Edition : 21.02.92 : 04.90 Replaces : ISO-4113 Test oil

Combination no. : 0 403 436 104

Injection pump

Pump designation : PES6MW100/120RS1143

: 0 413 406 137 EP type number

Governor

: RQV350...12CDMWE2-1 Governor design.

: 0 420 083 153 Governer no.

Customer-spec, information : CUMMINS Customer

: 6 CTA-830 Engine

: 179.0 1st version kW : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 017

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.15...3.25 Prestroke mm : (3.10...3.30)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm: 12.40...12.50

Del.quantity cm3/: 14.4...14.6

100 s: (14.2...14.8)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 7.4...7.6
Del.quantity cm3/ : 1.4...1.8

100 s: (1.1...2.0)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1250 1st speed

travel mm : 7.60...7.80 rpm : 13502nd speed

: 8.60...9.00 rpm : 350 travel mm 3rd speed

travel mm : 1.20...1.60

rpm : 800 4th speed

: 4.90...5.50 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200 Aneroid pressure h: 700

: 144.0...146.0 Del.quantity 1000 : (142.0...148.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing: 1st rack travel in: 11.40 rpm : 1250...1260 Speed 2nd rack travel in: 4.00 rpm : 1375...1405 Speed 4th rack travel in: 1500 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 7.5 Testing: Speed : 200 rom Minimum rack trave: 9.50 : 350 COM Rack travel in mm: 7.40...7.60 CONSTANT REGULATION rpm : 360...500 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 12.40...12.50 2nd speed rpm : 750 Rack travel in m: 12.70...12.80 d speed rom : 1000 Rack travel in m: 12.40...12.60 3rd speed 4th speed rpm : 900 Rack travel in m: 12.50...12.70 Ameroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : : 11.30...11.40 Rack travel mm Measurement 1/min : 500Speed 1st pressure hPa : 390 Rack travel in m: 11.60...11.70 2nd pressure hPa : 500
Rack travel in m: 12.40...12.70
3rd pressure hPa : 700
Rack travel in m: 12.90...13.10 START CUT-OUT

1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 750

Del.quantity cm3/: 143.0...146.0 1000 s: (140.5...148.5)

cm3 : 5.00 1000 s: (7.0) Spread

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 112.0...114.0 1000 s: (110.0...116.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40

rpm : 1250...1260 Speed

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 210.0...230.0 1000 s: (207.0...233.0) Rack travel in mm: 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 7.40...7.60 Del.quantity cm3/: 14.0...18.0 1000 s: (11.5...20.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Start-of-delivery mark at 10° cam rotation angle after start of delivery,

cylinder 1

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 30...32 : 3.15...3.25 Note remarks Prestroke mm : (3.10...3.30) : CUM 8,3 D16 : 21.02.92 Test sheet Rack travel in mm : 9,00...12.00 : 1-5-3-6-2-4 Edition Firing order : 09.91 Replaces : ISO-4113 Test oil Combination no. : 0 403 436 104FB Phasina : 0-60-120-180-240-300 Phasina Tolerance + - ° : 0.50 (0.75) Injection pump Pump designation : PES6MW100/120RS1143 : 0 413 406 137 EP type number BASIC SETTING Governor Governor design. : RQV350...1200Mw82-1 1st speed rpm: 1100 : 0 420 083 153 Governer no. Rack travel in mm : 12.30...12.40 : 3281356 Cust. part no. Del.quantity cm3/: 13.6...13.8 Customer-spec, information 100 s: (13.4...14.0) Customer : CUMMINS Engine : 6 CTAA 8.3 Spread cm3 : 0.31st version kW : 179.0 100 s: (0.6) Rated speed : 2400 2nd speed rpm : 350.0 Rack travel in mm : 7.6...7.8 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.4...1.8 100 s: (1.1...2.0) Test oil inlet temp. °C : 38...42 cm3 : 0.3Spread 100 s: (0.5) Overflow valve : 1 417 413 047 (B) Setting of injection pump with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL rpm : 1250 1st speed Test nozzle holder : 1 688 901 017 assembly travel mm : 7.60...7.80 rpm : 1350 2nd speed Opening travel mm : 8.60...9.00 : 350 : 207...210 3rd speed pressure, bar rpra : 1.20...1.60 travel mm Orifice plate rpm : 800 4th speed diameter mm : 4.90...5.50 : 0,6 travel mm FULL LOAD DELIV. AT FULL LOAD STOP Test lines : 1 680 750 014 1st version Outside diameter Speed rpm : 1100 Aneroid pressure h: 1000 x Wall thickness Del.quantity : 136.0...138.0 x Length mm : 6.00x2.00x600 1000 : (134.0...140.0) : 3.50 (A) Injection pump setting values Spread cm3 : (6.00)

1000

RATED SPEED

1st version

BEGINNING OF DELIVERY

per values

Insp. values in parentheses Set equal delivery quant.

Control Lever position degrees: 90...100 Testing: 1st rack travel in: 11.30 Speed rpm : 1140...1150 2nd rack travel in: 4.00 Speed rpm : 1285...1315 4th rack travel in: 1400 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 66...74 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 7.7 Testing: rpm : 200 Speed Minimum rack trave: 9.50 rpm : 350 Speed Rack travel in mm : 7.60...7.80 CONSTANT REGULATION rpm : 360...500 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100
Rack travel in m: 12.30...12.40
2nd speed rpm : 700
Rack travel in m: 13.10...13.30 3rd speed rpm : 500 Rack travel in m: 13.30...13.50 Ameroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : -Rack travel mm : 12.10...12.20

Measurement

1st pressure hPa : 450 Rack travel in m: 12.40...12.50

2nd pressure hPa : 650 Rack travel in m: 12.80...13.10

1/min: 500

3rd pressure hPa : 1000

Rack travel in m: 13.30...13.50

START CUT-OUT

1/min: 270 (280) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1000

Speed rpm : 700 Del.quantity cm3/: 146.0...149.0 1000 s: (143.5...151.5)

cm3 : 5.00 Spread 1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 125.0...127.0 1000 s: (123.0...129.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.30 rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 210.0...230.0 1000 s: (207.0...233.0) Rack travel in mm: 19.00...21.00

LOW IDLE

rpm : 350

Rack travel in mm : 7.60...7.80 Del.quantity cm3/: 14.0...18.0 1000 s: (11.5...20.5)

cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.30...3.40 : (3.25...3.45) Rack travel in mm : 12.00...14.00 Note remarks : 1-5-3-6-2-4 Firing order : PER 5,8 D : 14.02.92 Test sheet **Fdition** : 10.91 Replaces : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing Combination no. : 0 403 444 119 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PES4MW100/320RS1199 : 0 413 404 112 EP type number BASIC SETTING Governor Governor design. : RQV300...1300MW110K 1st speed nom: 1300 : 0 420 083 996 Governer no. Rack travel in mm : 13.00...13.10 Customer-spec. information Customer : PERKINS Del.quantity cm3/: 12.4...12.6 100 s: (12.2...12.8) : 110 TI Engine 1st version kW : 82.0 Spread cm3 : 0.3: 2600 Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS rom : 300.02nd speed Rack travel in mm : 6.1...6.3 Del.quantity cm3/ : 1.6...2.0 Test oil inlet temp. °C : 38...42 100 s: (1.3...2.2) cm3 : 0.3Overflow valve Spread : 1 419 992 198 100 s: (0.5) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 101 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 1350: 10.00...10.40 Opening travel mm pressure, bar : 207...210 2nd speed : 900 mon : 6.40...6.60 travel mm 3rd speed : 480 Orifice plate rom 3.10...3.70 diameter mm : 0,6 travel mm 300 4th speed rpm travel mm : 1.40...1.80 Test Lines : 1 680 750 008 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 Speed rpm : 1380 Rack travel in mm : 15.20...17.80 : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses FULL LOAD DELIV. AT FULL LOAD STOP Set equal delivery quant. per values 1st version rpm : 1300Speed BEGINNING OF DELIVERY Aneroid pressure h: 900 : 124.0...126.0 Test pressure, bar: 30...32 Del.quantity

1000 : (122.0...128.0)

cm3 : 3.50 1000 : (6.00) Spread RATED SPEED 1st version Control Lever position degrees: 118...126 Testing: 1st rack travel in: 12.00 Speed rpm : 1340...1350 2nd rack travel in: 4.00 rpm : 1450...1480 Speed 4th rack travel in: 1600 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 70...78 Setting point w/out bumper spring rom Rack travel in mm: 6.2 Testing: Speed rpm : 200 Minimum rack trave: 7.50 rpm : 300 Speed Rack travel in mm : 6.10...6.30 CONSTANT REGULATION rpm : 330...500 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 13.00...13.10 2nd speed rpm : 800 Rack travel in m: 12.00...12.20 rpm : 500 3rd speed Rack travel in m: 10.10...10.30 4th speed rpm : 1000 Rack travel in m: 12.40...12.70 5th speed rpm : 400 Rack travel in m: 9.70...9.90 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : -Pressure : 8,70,...8,80 Rack travel mm

Rack travel in m: 9.00...9.10 2nd pressure hPa : 180 Rack travel in m: 9.70...10.00 3rd pressure hPa : 900
Rack travel in m: 10.10...10.30 START CUT-OUT Speed 1/min : 240 (250) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 : 300 Speed rpn Del.quantity cm3/: 118.0...121.0 1000 s: (115.5...123.5) Spread cm3 : 5.00 1000 s: (7.0) Ameroid pressure h: rpm_ : 500 Speed Del.quantity cm3/: 77.0...79.0 1000 s: (75.0...81.0) BREAKAWAY 1st version 1mm rack travel less than fuli load rack tr: 12.00 rpm : 1340...1350 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 90.0...100.0 1000 s: (87.0...103.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 300 Rack travel in mm : 6.10...6.30 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: Start-of-delivery blocking 46.5° before start of delivery of cylinder 1

Speed

Measurement

1/min: 500

1st pressure hPa : 130

Note remarks

Test sheet 1/0i⁻

Edition : 14.02.92

Replaces

Test oil : ISO-4113

Combination no. : 0 403 444 135

Injection pump

Pump designation : PES4MW100/320RS1223

EP type number : 0 413 404 119

Governor

Governor design. : RQV300...1100f#W122-1

: 0 420 083 990 Governer no.

Customer-spec, information

Customer : VMF

Engine : TD45E Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 173...176 pressure, bar

: 1 680 750 014 Test lines

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 3.00...3.10 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

Phasina : 0-90-180-270

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 14.70...14.80

Del.quantity cm3/: 12.8...13.0

100 s: (12.6...13.2)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 5.7...5.9

Del.quantity cm3/: 2.8...3.2

100 s: (2.5...3.4)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1145 1st speed

travel mm : 10.00...10.40

2nd speed rom : 800

: 6.10...6.30 travel mm

: 500 3rd speed rpm

: 3.40...4.00 travel mm

: 300 4th speed rpm

: 1.50...1.90 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 750

: 128.0...130.0 Del.quantity

1000 : (126.0...132.0) cm3 : 3.50

Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 116...124

Testing:

1st rack travel in: 13.70

rpm : 1140...1150 Speed

2nd rack travel in: 4.00 Speed rpm : 1240...1270 4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 72...80 Setting point w/out bumper spring rpm : 300 Rack travel in mm : 5.8 Testing: Speed rpm : 200 Minimum rack trave: 7.50 rpm Rack travel in mm : 5.70...5.90 TORQUE CONTROL rpm : 1100 1st speed Rack travel in m: 14.70...14.80 rpm : 880 2nd speed Rack travel in m: 15.00...15.10 3rd speed rpm : 550 Rack travel in m: 14.20...14.30 4th speed rpm : 750 Rack travel in m: 14.70...14.80 Aneroid/Altitude Compensator Test 1st version Setting : 550 Speed rpm hPa : -Pressure : 12.80...12.90 Rack travel mm Measurement 1/min: 550 Speed 1st pressure hPa : 220 Rack travel in m: 13.10...13.20 2nd pressure hPa : 370 Rack travel in m: 13.60...13.90 3rd pressure hPa : 750 Rack travel in m: 14.20...14.30 START CUT-OUT 1/min: 220 (240) Speed

Torque control curve - 1st version FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 750 rpm : 880 Speed

Del.quantity cm3/: 135.5...138.5 1000 s: (133.0...141.0) cm3 : 5.50 Spread 1000 s: (7.0) Aneroid pressure h: -Speed rpm: 550
Del.quantity cm3/: 86.0...88.0
1000 s: (84.0...90.0) RACK STOP ADJUSTMENT rpm : 100 Speed **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.70 rpm : 1140...1150 Speed STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 145.0...155.0 1000 s: (142.0...158.0) Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rom : 300 Rack travel in mm : 5.70...5.90 Del.quantity cm3/ : 28.0...32.0 1000 s: (25.5...34.5) cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

Note remarks

: MB Test sheet

: 14.02.92 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 403 444 137

Injection pump

Pump designation : PES4MW100/720RS1212

EP type number : 0 413 404 114

Governor

Governor design. : RQV300...1300MW59-23

: 0 420 083 269 Governer no.

Customer-spec. information Customer : MB-NFZ

Engine : 0M364LA

1st version kW : 102.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter

x Wall thickness

: 8.00X2.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

: 0-90-180-270 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 6.3...6.5 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

cm3 : 0.3Spiread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1450 1st speed : 9.40...10.00 travel mm

rpm : 1350 2nd speed

: 8.50...8.70

travel mm

: 500 3rd speed **L**DW

: 2.70...3.30 travel mm

: 300 4th speed rpm

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1350

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed

Aneroid pressure h: 700

Del.quantity : 101.0...105.0)

: 3.50 cm3

Spread

: (6.00) 1000

RATED SPEED

1st version rpm : 500 Del.quantity cm3/: 36.0...38.0 Control lever 1000 s: (34.0...40.0) position degrees: 108...116 Testina: 1st rack travel in: 12.20 HREAKAWAY rpm : 1340...1350 Speed 2nd rack travel in: 4.00 1st version : 1440...1470 Speed rom 1mm rack travel less than 4th rack travel in: 1550 full load rack tr: 12.20 rom : 0.00...1.00Speed rpm : 1340...1350 Speed LOW IDLE 1 Control Lever STARTING FUEL DELIVERY position degrees: 74...82 Setting point w/out bumper spring rpm : 300 Speed rpm : 100 Del.quantity cm3/: 85.0...95.0 1000 s: (82.0...98.0) Rack travel in mm : 6.4 Testing: Speed : 200 LOW IDLE rpm Minimum rack trave: 8.00 : 300 rpm : 300 Speed Speed rom Rack travel in mm : 6.30...6.50 Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3: 3.50 1000 s: (5.50) Aneroid/Altitude Compensator Test 1st version Remarks: Setting : : 500 Speed rpm hPa : -Pressure : 10.00...10.10 Rack travel mm Measurement 1/min : 500 Speed 1st pressure hPa : 200 Rack travel in m: 10.90...11.10 2nd pressure hPa : 400 Rack travel in m: 12.60...12.80 3rd pressure hPa : 700 Rack travel in m: 13.20...13.30 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm : 600
Del.quantity cm3/: 86.0...89.0
1000 s: (83.5...91.5)
Spread cm3 : 5.00 1000 s: (7.0) Aneroid pressure h: -

Note remarks

Test sheet

Edition : 14.02.92

Replaces

Test oil : ISO-4113

Combination no. : 0 403 444 138

Injection pump

Pump designation : PES4MW100/720RS1151

EP type number : 0 413 404 104

Governor

Governor design. : RQV300...1300MW50-27

Governer no. : 0 420 083 273

Customer-spec. information Customer : MB-NFZ

: 0M364A Engine

: 79.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

: 1 680 750 089 Test lines

Outside diameter

x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Phasing

: 0-90-180-270

: 1-3-4-2

Tolerance + - °

Firing order

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 1300

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 8.2...8.4

100 s: (8.0...8.6)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1450 1st speed

: 9.40...10.00 travel mm

2nd speed rpm : 1350

: 8.50...8.70 travel mm rpm : 500 3rd speed

: 2.70...3.30 travel mm

: 300 4th speed rom

: 1.20...1.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700 Aneroid Del.quantity 1000

: 82.0...84.0 : (80.0...86.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 108...116 Testing: 1st version 1st rack travel in: 9.80 Aneroid pressure h: 700 rpm : 1340...1350 Speed : 600 Speed rom Del.quantity cm3/: 75.0...78.0 1000 s: (72.5...80.5) 2nd rack travel in: 4.00 rpm : 1420...1450 Speed 4th rack travel in: 1500 cm3 : 5.00 Spread 1000 s: (7.0) rom : 0.00...1.00 Speed Anaroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 46.0...48.0 1000 s: (44.0...50.0) LOW IDLE 1 Control Lever position degrees: 74...82 Setting point w/out bumper spring rpm : 300 **BREAKAWAY** Rack travel in mm: 6.4 Testing: 1st version Speed : 200 1mm rack travel less than rom Minimum rack trave: 8.00 : 300 full load rack tr: 9.80 rpm Rack travel in mm : 6.30...6.50 rpm : 1340...1350 Speed STARTING FUEL DELIVERY TORQUE CONTROL Dimension a mm : 0.80 Torque control curve – 1st version 1st speed rpm : 1300 Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0) Rack travel in m: 10.80...10.90 : 600 2nd speed rpm Rack travel in m: 11.60...11.70 3rd speed rpm : 1000 LOW IDLE Rack travel in m: 11.60...11.70 4th speed rpm : 1175 rpm : 300 Speed Rack travel in m: 11.30...11.50 Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Aneroid/Altitude cm3 : 3.50 Compensator Test Spread 1000 s: (5.50) Remarks: 1st version Settina : 500 Speed rpm Pressure hPa : -: 9.70...9.80 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 10.70...10.90 2nd pressure hPa : 300 Rack travel in m: 11.20...11.40 3rd pressure hPa : 700 Rack travel in m: 11.60...11.70 START CUT-OUT 1/min: 220 (240) Speed

Note remarks

: RVI 8,8 S 2 Test sheet Edition : 21.02.92 Replaces : 08.91

Test oil : ISO-4113

Combination no. : 0 403 446 220

Injection pump

Pump designation : PES6MW100/320RS1171

: 0 413 406 156 EP type number

Governor

Governor design. : RQV300...1400MW80-3

Governer no. : 0 420 083 183

Customer-spec. information Customer : RVI

: MIDR 06.02.12D Engine

1st version kW : 134.0 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 2 417 413 033

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

: 173...176 pressure, bar

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2=4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 9.3...9.5

100 s: (9.1...9.7)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed

Rack travel in mm : 5.10...5.50 Del.quantity cm3/ : 1.5...1.9 100 s: (1.2...2.1)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1590 1st speed

: 9.50...9.90 travel mm

rpm : 1450 2nd speed

: 8.50...8.70 travel mm

3rd speed

rpm : 500 : 2.80...3.40 travel mm

: 300 4th speed rpm

travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400 Aneroid pressure h: 750

: 93.0...95.0 Del.quantity

1000 : (91.0...97.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 118...126

1st rack travel in: 10.10

rpm : 1470...1480 Speed 2nd rack travel in: 4.00 rpm : 1590...1620 Speed 4th rack travel in: 1700 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 64...72 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 5.8 Testing: : 200 Speed rpm Minimum rack trave: 7.00 Speed rpm : 300 Rack travel in mm : 5.10...5.50 Aneroid/Altitude Compensator Test 1st version Setting : 500 : 750 Speed rpm Pressure hPa : 11.10...11.20 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.40...8.60 2nd pressure hPa : 200 Rack travel in m: 10.40...10.50 3rd pressure hPa : 100 Rack travel in m: 8.80...9.10 START CUT-OUT 1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 750 : 900 Speed rpm Del.quantity cm3/: 87.5...90.5 1000 s: (85.0...93.0) cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 40.0...42.0 1000 s: (38.0...44.0)

1st version 1mm rack travel less than full load rack tr: 10.10

STARTING FUEL DELIVERY

rpm : 1470...1480

LOW IDLE

Speed

Remarks:

Start-of-delivery mark mode with prestroke 3.00...3.10 mm at barrel 1

Note remarks

Test sheet : PER 10,0 S Edition : 14.02.92 : 04.91 Replaces Test oil : ISO-4113

Combination no. : 0 403 446 250

Injection pump

Pump designation: PES6MW100/320RS1194

: 0 413 406 186 EP type number

Governor

Governor design. : RQV300...1300MW108K

: 0 420 083 998 Governer no.

Customer-spec. information Customer : PERKINS

: 180 TI Engine

1st version kW : 134.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Coening

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.30...3.40 Prestroke mm : (3.25...3.45)

Rack travel in mm : 12.00...14.00 Firing order : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 14.30...14.40

Del.quantity cm3/: 13.4...13.6

100 s: (13.2...13.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm : 6.1...6.3 Del.quantity cm3/ : 1.4...1.8

100 s: (1.1...2.0)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rom : 1350 1st speed

: 10.00...10.40 travel mm

rpm : 900 2nd speed

: 6.40...6.60 travel mm

rpm : 480 3rd speed

: 3.10...3.70 travel mm

4th speed rpm : 300

: 1.40...1.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1380 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300Speed Aneroid pressure h: 900

Del.quantity : 134.0...138.0)

cm3 : 3.50 1000 : (6.00) Spread RATED SPEED 1st version Control lever position degrees: 118...126 Testing: 1st rack travel in: 13.30 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 speed rpm : 1480...1510 4th rack travel in: 1600 Speed Speed rom : 0.00...1.00LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring nom : 300 Rack travei in mm: 6.2 Testing: Speed : 200 rom Minimum rack trave: 7.50 rpm : 300 Rack travel in mm : 6.10...6.30 CONSTANT REGULATION Speed rpm : 330...500 TORQUE CONTROL Torque control curve - 1st version : 1300 1st speed rom . Rack travel in m: 14.30...14.40 rpm : 800 2nd speed Rack travel in m: 13.10...13.30 d speed rpm : 500 Rack travel in m: 11.70...11.90 3rd speed 4th speed rpm : 1000 Rack travel in m: 13.60...13.90 5th speed rpm : 700 Rack travel in m: 12.60...12.90 Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : Rack travel mm : 9.90...10.00

Measurement Speed 1/min: 500

1st pressure hPa : 180

Rack travel in m: 10.40...10.50 2nd pressure hPa : 220 Rack travel in m: 10.90...11.20 3rd pressure hPa : 900 Rack travel in m: 11.70...11.90

START CUT-OUT

Speed 1/min: 240 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm: 800
Del.quantity cm3/: 126.0...129.0
1000 s: (123.5...131.5)
Spread cm3: 5.00
1000 s: (7.0)
Aneroid pressure h: Speed rpm: 500
Del.quantity cm3/: 77.0...79.0

1000 s: (75.0...81.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.30 Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quaratity cm3/: 90.0...100.0
1000 s: (87.0...103.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery blocking 46.5° before start of delivery of cylinder 1

Note remarks

: MB6,101 Test sheet : 28.02.92 Edition Replaces : 12.91 Test oil : ISO-4113

: 0 403 446 274 Combination no.

Injection pump

Pump designation : PES6MW100/720RS1131

EP type number : 0 413 406 123

Governor

Governor design. : RQ300/1300MW105-3 : 0 420 082 050 Governer no.

Customer-spec. information : MB-NFZ Customer

: OM 366 A Engine

: 121.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Coening

: 172...175 pressure, bar

: 1 680 715 089 Test lines

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm : (3.65...3.75)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 8.8...9.0

100 s: (8.6...9.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 6.1...6.3 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rom : 1400 1st speed : 8.80...9.20 travel mm

rpm : 1300 2nd speed

: 7.50...7.70 travel mm

rpm : 500 3rd speed

: 4.90...5.50 travel mm

300 4th speed rpm

: 2.10...2.50 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108

rpm : 1200

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

: 88.0...90.0 Del.quantity

1000 : (86.0...92.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version START CUT-OUT Control lever position degrees: 96...104 1/min: 200 (230) Speed Setting point: FUEL DELIVERY CHARACTERISTICS Speed : 1200 rpm Rack travel in mm: 15.5 Testing: 1st version 1st rack travel in: 9.90 Aneroid pressure h: 700 rpm : 1345...1360 rpm : 750 Speed Speed Del.quantity cm3/: 86.0...89.0 2nd rack travel in: 4.00 1000 s: (83.5...91.5) Speed rpm : 1410...1440 4th rack travel in: 1500 cm3 : 5.00 Spread 1000 s: (7.0) Speed rpm : 0.00...1.00 Aneroid pressure h: rpm : 500 LOW IDLE 1 Speed Del.quantity cm3/: 49.0...51.0 Control Lever 1000 s: (47.0...53.0) position degrees: 72...80 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 6.2 BREAKAWAY 1st version Testing: : 200 1mm rack travel less than Speed man Minimum rack trave: 8.00 full load rack tr: 9.90 rpm : 300 Rack travel in mm : 6.10...6.30 rpm : 1345...1360 Speed Rack travel in mm: 2.00 : 510...550 Speed STARTING FUEL DELIVERY rom TORQUE CONTROL Speed rpm : 100 Del.quantity ch3/ : 100.0...110.0 1000 s: (97.0...113.0) Dimension a mm : 0.70 Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 10.90...11.00 rpm : 750 LOW IDLE 2nd speed Rack travel in m: 11.60...11.70 Speed rpm : 300
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5) 3rd speed rpm : 1100 Rack travel in m: 11.10...11.30 Aneroid/Altitude cm3 : 3.50 Compensator Test Spread 1000 s: (5,50) 1st version Remarks: Setting : 500 Speed rpm hPa : 200 Pressure Rack travel mm : 10.20...10.30 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.80...9.90 2nd pressure hPa : 400 Rack travel in m: 11.10...11.40 3rd pressure hPa : 700 Rack travel in m: 11.60...11.70

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : RVI 6,2 J : 28.02.92 Edition Replaces : 10.91 Test oil : ISO-4113 Combination no. : 0 403 446 285 Injection pump Pump designation : PES6MW100/320RS1214 : 0 413 406 204 EP type number Governor Governor design. : RQV275...1250MW115K : 0 420 083 994 Governer no. Customer-spec. information Customer : RVI Engine : MIDR 060226 W : 151.0 1st version kW Rated speed : 2500 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 033 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 101 assembly Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 30...32

Prestroke mm : 4.20...4.30 : (4.15...4.35) Rack travel in mm : 16.50...19.50 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1250 Rack travel in mm : 14.00...14.10 Del.quantity cm3/ : 11.5...11.7 100 s: (11.3...11.9) cm3 : 0.3Spread 100 s: (0.6) rpm : 275.0 2nd speed Rack travel in mm: 6.00...6.20 Del.quantity cm3/ : 2.1...2.5 100 s: (1.8...2.7) cm3 : 0.3 Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1330 1st speed : 9.80...10.20 travel mm rpm : 950 2nd speed : 6.90...7.10 travel mm : 550 3rd speed rpm : 3.60...4.20 : 275 travel mm 4th speed rpm : 0.80...1.20 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 1350 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1250 Speed Aneroid pressure h: 1000 Aneroid P. Del.quantity 1000 : 115.0...117.0 : (113.0...119.0) : 3.50

Spread

cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 294...302

Testina:

1st rack travel in: 13.00

rpm : 1320...1330

2nd rack travel in: 4.00

rpm : 1465...1495 Speed

4th rack travel in: 1600

rom : 0.00...1.00 Speed

LOW IDLE 1

Control Lever

position degrees: 240...248 Setting point w/out bumper spring

rom Rack travel in mm: 7.9

Testing:

: 200 Speed npin

Minimum rack trave: 6.70

: 275 Speed rom

Rack travel in mm : 6.00 ..6.20

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1250 1st speed

Rack travel in m: 14.00...14.10

2nd speed rpm : 700

Rack travel in m: 13.05...13.15

3rd speed rpm : 1000
Rack travel in m: 13.40...13.60
4th speed rpm : 500
Rack travel in m: 12.70...12.80

Aneroid/Altitude

Compensator Test

1st version

Settina

: 500 Speed rpm

hPa : 1000 Pressure

Rack travel mm : 14.00...14.10

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.50...10.90

2nd pressure hPa : 320 Rack travel in m: 12.20...12.30 3rd pressure hPa : 200

Rack travel in m: 11.30...11.60

START CUT-OUT

1/min: 210 (230) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

rpm : 700 Speed

Del.quantity cm3/: 108.5...111.5 1000 s: (106.0...114.0)

cm3 : 5.00Spread

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 71.0...73.0 1000 s: (69.0...75.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

rpm : 1320...1330 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 90.0...110.0

1000 s: (87.0...113.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

rpm : 275 Speed

Rack travel in mm : 6.00...6.20

Del.quantity cm3/: 21.0...25.0

1000 s: (18.5...27.5)

cm3 : 3.50 Spread

1000 s: (5.00)

Remarks:

Note remarks

: RVI 6,2 K Test sheet : 21.02.92 Edition : 10.91 Peplaces Test oil : ISO-4113

Combination no. : 0 403 446 286

Injection pump

Fumo designation : PES6MW100/320RS1216

EP type number : 0 413 406 206

Governor

Governor design. : RQV350...1175MW113-2

: 0 420 083 248 Governer no.

Customer-spec. information Customer : RVT

: MIDR 060226 X Engine

list version kW : 166.6 : 2350 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet tems. °C : 38...42

Overflow valve

: 2 417 413 033

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.20...4.30 : (4.15...4.35)

Rack travel in mm : 11.50...14.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1175 1st speed

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 11.7...11.9

100 s: (11.5...12.1)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 275.0 2nd speed

Rack travel in mm : 5.90...6.30 Del.quantity cm3/ : 2.8...3.2

100 s: (2.5...3.4) cm3 : 0.3

Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400

travel mm : 7.80...8.20 2nd speed rpm : 1220

travel mm : 6.80...7.00

3rd speed : 600 rpm

: 3.20...3.80 : 350 travel mm

4th speed rpm

: 0.70...1.10 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1/60 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175 Aneroid pressure h: 1000

Del.quantity : 117.0...119.0

1000 : (115.0...121.0)

: 3.50 Spread cm3

1000 : (6.00) RATED SPEED

ist version Control lever

position degrees: 294...302

Testing:

1st rack travel in: 13.80

rpm : 1250...1260 Speed

2nd rack travel in: 4.00

rpm : 1460...1490 Speed

4th rack travel in: 1600

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 244...252 Setting point w/out bumper spring

Speed rem

Rack travel in mm: 7.7

Testina:

: 200 Speed rpm Minimum rack trave: 6.90

: 275 rom

Rack travel in mm : 5.90...6.30

Ameroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rpm hPa : 1000 Pressure

: 13.80...13.90 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.40...10.00

2nd pressure hPa : 600

Rack travel in m: 13.30...13.40 3rd pressure hPa : 240

Rack travel in m: 13.10...13.40

START CUT-OUT

1/min : 260 (280) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

rpm : 700 Speed

Del.quantity cm3/: 123.0...127.0 1000 s: (121.0...129.0)

cm3 : 5.00Spread

1000 s: (7.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 62.0...64.0

1000 s: (60.0...66.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

rpm : 1250...1260 Speed

STARTING FUEL DELIVERY

: 100 Speed rom

Del.quantity cm3/: 88.0...102.0 1000 s: (85.0...105.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.90...6.30

Del.quantity cm3/: 28.0...32.0 1000 s: (25.5...34.5)

cm3 : 3.50 Spread

1000 s: (5.00)

Remarks:

101

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.20...4.30 Prestroke mm : (4.15...4.35)

Rack travel in mm : 11.50...14.50

Firing order : 1-5-3-6-2-4 Note remarks : RVI 6,2 K 1 Test sheet : 14.02.92 **Fdition** : 10.91 Replaces Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing Combination no. : 0 403 446 293 Tolerance + - * : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/320RS1216 : 0 413 406 206 EP type number 1st speed rpm: 1250 Governor : RQV275...1250MW124K Rack travel in mm : 13.00...13.10 Governor design. Governer no. : 0 420 083 989 Del.guantity cm3/: 10.0...10.2 Customer-spec. information 100 s: (9.8...10.4) Customer : RVT cm3 : 0.3Engine : MIDR 060226 U Spread 100 s: (0.6) 1st version kW : 110.0 : 2500 Rated speed rpm : 275.0 2nd speed Rack travel in mm : 5.80...6.20 Del.quantity cm3/ : 2.0...2.4 100 s: (1.7...2.6) TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 cm3 : 0.3Spread 100 s: (0.5) Overflow valve : 2 417 413 033 (B) Setting of injection pump with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL Test nozzle holder 1st speed rom : 1330: 1 688 901 101 : 9.80...10.20 assembly travel mm : 925 2nd speed rpm : 6.60...6.80 travel mm Openina : 207...210 : 550 3rd speed pressure, bar rom : 3.60...4.20 travel mm : 275 Orifice plate 4th speed rpm : 0.80...1.20 diameter mm : 0,6 travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 008 Control-lever position Degree: -1 Outside diameter rpm : 1350 Speed x Wall thickness Rack travel in mm : 15.20...17.80 : 6.00x2.00x600 x Length mm FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version

Speed

Spread

Del.quantity

rpm : 1250

: 3.50

: (6.00)

1000

cm3

1000

: 100.0...102.0

: (98.0...104.0)

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

RATED SPEED

1st version Control lever

position degrees: 118...126

Testing:

1st rack travel in: 12.00

rpm : 1320...1340 Speed

2nd rack travel in: 4.00

Speed rpm : 1460...1500 4th rack travel in: 1600

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control Lever

position degrees: 58...66

Setting point w/out bumper spring

rpm : 275 Rack travel in mm: 7.0

Testina:

Speed rpm : 100

Minimum rack trave: 6.50

rpm Rack travel in mm : 5.80...6.20

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250
Rack travel in m: 13.00 ...13.10
2nd speed rpm : 700

Rack travel in m: 11.60...11.70

3rd speed rpm : 1000

Rack travel in m: 12.30...12.50

4th speed rpm : 500

Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min: 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

: 700 Speed riom:

Del.quantity cm3/: 86.5...89.5 1000 s: (84.0...92.0)

cm3 : 5.00 Spread

1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 1320...1340

103

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 88.0...112.0 1000 s: (85.0...115.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.80...6.20
Del.quantity cm3/ : 20.0...24.0

1000 s: (17.5...26.5)

cm3 : 3.50Spread

1000 s: (5.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

Test sheet : MB 6,1 B 8
Edition : 21.02.92
Replaces : 01.92
Test oil : ISO-4113

Combination ro. : 0 403 446 294

Injection pump

Pump designation : PES6MW100/720RS1131-

.

EP type number : 0 413 406 165

Governor

Governor design. : RQV350...1100MW67-4

Governer no. : 0 420 083 261

Customer—spec. information Customer : MB-NFZ

Engine : 0M366LA

1st version kW : 162.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 11.2...11.4

100 s: (11.0...11.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.5 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : <u>1</u>150

travel mm : 7.80...8.30

2nd speed rpm : 880 travel mm : 5.90...6.10

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100 Aneroid pressure h: 1000

Del.quantity : 112.0...114.0

1000 : (110.0...116.0)

Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 120...128 Testing: 1st rack travel in: 12.60 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1285...1315 Speed 4th rack travel in: 1450 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 74...82 Setting point w/out bumper spring mom Rack travel in mm: 5.4 Testing: Speed COM Minimum rack trave: 7.00 : 350 Speed rom Rack travel in mm : 5.30...5.50 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm hPa : -Pressure : 9.40...9.50 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : 400 Rack travel in m: 10.60...10.80 2nd pressure hPa : 600 Rack travel in m: 12.60...12.80 3rd pressure hPa : 1000 Rack travel in m: 13.60...13.80 START CUT-OUT 1/min: 180 (200) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 : 600 Speed rpm Del.quantity cm3/: 104.5...107.5 1000 s: (102.0...110.0) Spread cm3: 5.00

1000 s: (7.0)

Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 35.0...37.0 1000 s: (33.0...39.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.60 rpm : 1140...1150 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0) LOW IDLE Speed rpm : 350 Rack travel in mm : 5.30...5.50
Del.quantity cm3/: 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50 1000 s: (5.50) Remarks:

Note remarks

Test sheet : IHC 7,7 A 4 : 21.02.92 Edition : 11.91 Replaces : ISO-4113 Test oil

: 0 403 446 296 Combination no.

Injection pump

Pump designation : PES6MW100/320RS1204

EP type number : 0 413 406 192

Governor

Governor design. : RQV350...1350Mv46-42

: 0 420 083 263 Governer no.

Customer-spec. information Customer : NAVISTAR

: DTA-360 Engine

1st version kW : 142.0 : 2700 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.25...3.35 : (3.20...3.40) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75)Tolerance + - *

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 850

Rack travel in mm : 10.60...10.70

Del.guantity cm3/: 10.9...11.1

100 s: (10.7...11.3)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm: 5.2...5.4 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1450 1st speed

8.20...8.60 travel mm

: 1350 2nd speed rpm travel mm

7.40...7.60

: 500 3rd speed rpm travel mm

: 2.50...3.10 : 350 4th speed

rpm

: 1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

Aneroid pressure h: 900

: 109.5...111.5 Del.quantity 1000 : (107.5...113.5)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing:

1st rack travel in: 9.60

rpm : 1415...1435

2nd rack travel in: 4.00

Speed rpm : 1510...1520 4th rack travel in: 1600

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 68...76

Setting point w/out bumper spring

r)om Rack travel in mm: 5.3

Testing:

Speed rpm : 100

Minimum rack trave: 9.00

Speed rpm : 350 Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

rpm : 300...450 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom Pressure hPa :

Rack travel mm : 8.30...8.40

Measurement

1/min: 500 Speed

1st pressure hPa : 195

Rack travel in m: 8.90...9.00

2nd pressure hPa : 345

Rack travel in m: 9.90...10.30

3rd pressure hPa : 900

Rack travel in m: 10.60...10.70

START CUT-OUT

1/min: 280 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm : 1350 Speed

Del.quantity cm3/: 105.0...109.0 1000 s: (103.0...111.0)

cm3 : 5.00Spread

1000 s: (7.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 62.5...64.5 1000 s: (60.5...66.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.60

rpm : 1415...1435 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...180.0 1000 s: (137.0...183.0)

Rack travel in mm : 13.00...14.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 16.0...20.0

1000 s: (13.5...22.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

: IHC #1818797091

Only perform pump setting with original overflow valve without IH hose and

restrictor 1.2 mm diameter.

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before shutoff.

Note remarks

: IHC 7,7 A 5 Test sheet : 14.02.92 Edition Replaces : 11.91 Test oil : ISO-4113

Combination no. : 0 403 446 297

Injection pump

Pump designation : PES6MW100/320RS1204

: 0 413 406 192 EP type number

Governor

Governor design. : RQV350...1350MW46-43

: 0 420 083 264 Governer no.

Customer-spec, information Customer : NAVISTAR

Engine : DTA-366

: 127.0 1st version kW Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.25...3.35 Prestroke mm : (3.20...3.40)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 10.7...10.9

100 s: (10.5...11.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1450 1st speed : 8.20...8.60

travel mm 2nd speed rpm : 1350

: 7.40...7.60 travel mm

rpm : 500 3rd speed

: 2.50...3.10 travel mm

rpm : 350 4th speed

: 1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed Aneroid pressure h: 900

: 107.5...109.5 Del.quantity

1000 : (105.5...111.5)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 100...108

Testina:

1st rack travel in: 9.50

rpm : 1420...1440 Speed

2nd rack travel in: 4.00

: 1520...1530 Speed rpm

4th rack travel in: 1650

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 70...78

Setting point w/out bumper spring

rom Rack travel in mm: 5.1

Testing:

Speed rpm Minimum rack trave: 7.50 rpm : 350 Speed

Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

rpm : 300...450 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom hPa : -Pressure

: 8.20...8.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 180

Rack travel in m: 8.90...9.00

2nd pressure hPa : 330 Rack travel in m: 9.70...10.00

3rd pressure hPa : 900

Rack travel in m: 10.50...10.60

START CUT-OUT

Speed 1/min: 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 1350 Speed

Del.quantity cm3/: 103.5...107.5

1000 s: (101.5...109.5)

cm3 : 5.00Spread

1000 s: (7.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity rm3/: 61.5...63.5

1000 s: (59.5...65.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50

rpm : 1420...1440 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 140.0...180.0

1000 s: (137.0...183.0)

Rack travel in mm : 13.00...14.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

Spread cm3 : 3.501000 s: (5.50)

Remarks:

: IHC #1819274C91

Only perform pump setting with original overflow valve without IH hose and restrictor 1.2 mm diameter.

In unlatched condition, do not

operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before

shutoff.

Note remarks

Test sheet

: MB

Edition

: 14.02.92

Replaces

Test oil

: ISO-4113

Combination no.

: 0 403 446 302

Injection pump

Pump designation : PES6MW100/720RS1131

EP type number

: 0 413 406 123

Governor

Covernor design.

: RQV300...1300MW50-24 : 0 420 083 270

Governer no.

Customer-spec, information Customer

: MB-NF7

Engine

: OM 366 A

1st version kW

Rated speed

: 121.0 : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening

pressure, bar

: 172...175

Test lines

: 1 680 715 089

Outside diameter

x Wall thickness

x Length mm

: 8.00X2.50X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 3.70...3.80

: (3.65...3.75)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 1300

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 8.8...9.0

100 s: (8.6...9.2)

Spread

cm3 : 0.3

100 s: (0.6)

2nd speed

rpm : 300.0

Rack travel in mm: 6.1...6.3

Del.quantity cm3/: 1.0...1.4

Spread

100 s: (0.7...1.6)

cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 1450

travel mm

9.40...10.00

2nd speed

rpm : 1350

travel mm

: 8.50...8.70

3rd speed

: 500 rpa

travel mm

: 2.70...3.30

4th speed rpm

: 300

: 1.20...1.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1300

Aneroid pressure h: 700

Del.quantity

: 88.0...90.0

: 3.50

1000

: (86.0...92.0)

Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever position degrees: 108...116 Setting point: Speed : 1350 COM Rack travel in mm: 16.5 Testing: 1st rack travel in: 9.90 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1410...1440 Speed 4th rack travel in: 1500 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 72...80 Setting point w/out bumper spring rom : 300 Rack travel in mm: 6.2 Testing: Speed : 200 mon Minimum rack trave: 8.00 rom : 300 Rack travel in mm : 6.10...6.30 TORQUE CONTROL Dimension a mm : 0.70 Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 10.90...11.00 2nd speed rpm : 750 Rack travel in m: 11.60...11.70 3rd speed rpm : 1100 Rack travel in m: 11.10...11.30 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed mon Pressure hPa : : 9.80...9.90 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 10.20...10.30 2nd pressure hPa : 400 Rack travel in m: 10.80...11.10

1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 750 Speed Del.quantity cm3/: 86.0...89.0 1600 s: (83.5...91.5) Spread cm3 : 5.00 1000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 49.0...51.0 1000 s: (47.0...53.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.90 rpm : 1340...1350 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 100.0.. 110.0 1000 s: (97.0...113.0) LOW IDLE : 300 Speed rpm Rack travel in mm : 6.10...6.30 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) cm3 : 3.50 1000 s: (5.50) Spread Remarks: :

3rd pressure hPa : 700

Rack travel in m: 11.60...11.70

Note remarks

Test sheet : MB

Edition : 14.02.92

Replaces : -

Test oil : ISO-4113

Combination no. : 0 403 446 303

Injection pump

Pump designation : PES6MW100/720RS1131-

EP type number : 0 413 406 165

Governor

Governor design. : RQV300...1300MW50-25

Governer no. : 0 420 083 271

Customer-spec. information Customer : MB-NFZ

Engine : OM366LA

1st version kW : 155.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 089

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \cdot : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm3:0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 6.4...6.6 Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...10.00

2nd speed rpm : 1350 travel mu : 3.50...

travel mn : 3.50...8.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

GULS SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 1000

Del.quantity : 98.0...100.0

1000 : (96.0...102.0) bread cm3 : 3.50

Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version Control Lever position degrees: 108...116 Testing: 1st rack travel in: 12.10 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1440...1470 Speed 4th rack travel in: 1550 Speed npm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring : 300 riom Rack travel in mm: 6.5 Testing: Speed : 200 mon Minimum rack trave: 8.00 : 300 Speed rom Rack travel in mm : 6.40...6.60 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : -Pressure : 10.30...10.40 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 11.20...11.30 2nd pressure hPa : 350 Rack travel in m: 12.40...12.70 3rd pressure hPa : 1000 Rack travel in m: 13.10...13.20 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm_ : 750 Speed Del.quantity cm3/: 87.0...91.0 1000 s: (85.0...93.0) Spread cm3 : 5.001000 s: (7.0)

Aneroid pressure h: Speed rpm : 500
Del.quantity cm3/: 36.0...38.0
1000 s: (34.0...40.0)

BREAKAWAY
1st version
1mm rack travel less than

full load rack tr: 12.10 Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

J13

Note remarks

Test sheet

: 14.02.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 403 446 304

Injection pump

Pump designation : PES6MW100/720RS1131

EP type number : 0 413 406 123

Governor

Governor design. : RQV300...1200MW50-26

: 0 420 083 272 Governer no.

Customer-spec. information Customer : MB-NFZ

: OM 366 A Engine

: 115.0 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

Test lines : 1 680 715 089

Outside diameter x Wall thickness

: 8.00X2.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 10.20...10.30

Del.quantity cm3/: 8.4...8.6

100 s: (8.2...8.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 5.6...5.8 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1250 1st speed : 7.40...7.80 travel mm

: 880 2nd speed rpm

: 4.90...5.10 travel mm

3rd speed : 500 rpm : 2.70...3.30

travel mm 300 4th speed rpm

: 1.20...1.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Dearee: -1

rpm : 1250

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200Aneroid pressure h: 700

Del.quantity : 84.0...88.0)

: 3.50 Spread cm3

: (6.00) 1000

RATED SPEED

1st version Control Lever position degrees: 107...115 1st version Aneroid pressure h: 700 : 600 Testing: Speed rpm Del.quantity cm3/: 78.0...81.0 1000 s: (75.5...83.5) 1st rack travel in: 9.20 rpm : 1240...1250 Speed Spread cm3 : 5.002nd rack travel in: 4.00 rpm : 1335...1365 1000 s: (7.0) Speed 4th rack travel in: 1450 Aneroid pressure h: -: 500 rpm : 0.00, ...1.00Speed Speed rom Del.quantity cm3/: 44.0...46.0 1000 s: (42.0...48.0) LOW IDLE 1 Control lever position degrees: 72...80 Setting point w/out bumper spring **BREAKAWAY** rpm : 300 Rack travel in mm: 5.7 1st version 1mm rack travel less than Testing: Speed rpm : 200 full load rack tr: 9.20 rpm : 1240...1250 Minimum rack trave: 7.50 Spend : 300 rpm Rack travel in mm : 5.60...5.80 STARTING FUEL DELIVERY TORQUE CONTROL Dimension a mm : 0.80 Speed : 100 PDM Del.quantity cm3/ : 78.0...88.0 Torque control curve - 1st version 1000 s: (75.0...91.0) 1st speed rpm : 1200 Rack travel in m: 10.20...10.30 LOW IDLE 2nd speed rpm : 600 Rack travel in m: 10.90...11.10 3rd speed rpm : 1100 Speed rpm : 300 Rack travel in mm : 5.60...5.80 Rack travel in m: 10.30...10.60 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Aneroid/Altitude Spread Compensator Test cm3 : 3.501000 s: (5.50) 1st version Remarks: Setting Speed : 500 man hPa : -Pressure : 8.60...8.70 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 8.90...9.00 2nd pressure hPa : 350 Rack travel in m: 10.20...10.50 3rd pressure hPa : 700 Rack travel in m: 10.90...11.10 START CUT-OUT 1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet :

Edition : 17.02.92

Replaces

Test oil : ISO-4113

Combination no. : 0 403 446 295

Injection pump

Pump de fanation : PES8MW100/720RS1142

EP type number : 0 413 408 011

Governor

Governor design. : RQV500...1100MW77

Governer no. : 0 420 083 117

Customer—spec. information Customer : PERKINS

Engine: TV 8.640

1st version kW : 201.0 Rated speed : 2200 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening .

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-8-7-5-4-3-6-

2

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 14.30...14,40

Del.quantity cm3/: 12.1...12.3

100 s: (11.9...12.5)

Spread cm3:0.3

100 s: (0.6)

2nd speed rpm : 500.0 Rack travel in mm : 6.6...6.7 Del.quantity cm3/ : 0.9...1.3

100 s: (0.7...1.6)

Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1225

travel mm : 8.30...8.50

2nd speed rpm: 1250

travel min : 9.50...9.90 rd speed rpm : 500

3rd speed rpm : 500 travel mm : 1.30...1.70

4th speed rpm : 700

travel mm : 3.20...3.80

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1225

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100

Aneroid pressure h: 600

Del.quantity : 121.0...123.0

1000 : (119.0...125.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 13.30 Speed rpm : 1140...1150

2nd rack travel in: 4.00

rpm : 1200...1230 Speed

4th rack travel in: 1400

rom : 0.00...1.00 Speed

LOW IDLE 1

Control Lever

position degrees: 10...18

Testina:

Speed rpm : 100

Minimum rack trave: 8.20

rom : 500 Speed

Rack travel in mm : 6.60...6.70

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Ameroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed rpm

Pressure hPa : -: 12.20...12.50 Rack travel mm

Measurement

1/min : 500Speed

1st pressure hPa : 390 Rack travel in m: 12.80...12.90 2nd pressure hPa : 520 Rack travel in m: 13.50...13.80 3rd pressure hPa : 700

Rack travel in m: 14.30...14.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 74.5...76.5 1000 s: (72.5...78.5)

BREAKAWAY

1st version

J17

1mm rack travel less than

full load rack tr: 13.30

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 500
Rack travel in mm : 6.60...6.70
Del.quantity cm3/ : 9.5...13.5
1000 s: (7.0...16.0)

cm3 : 3.50 1000 s: (5.50) Spread

Remarks:

Start-of-delivery mark at control-rod travel 10.5 mm and 15° after start of

delivery.

Note remarks

: CUM 8,3 T Test sheet : 14.02.92 Edition : 08.91 Replaces Test oil : ISO-4113

: 0 403 466 126 Combination no.

Injection pump

Pump designation : PES6MW100/120RS1218 : 0 413 406 208

EP type number

Governor

: RSV400...1050MW7A319 Governor design.

-17

: 0 420 085 174 Governer no.

Customer-spec. information Customer : CUMMINS

Engine : 6 CTA

1st version kW : 261.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 3.15...3.25

: (3.10...3.30)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasina

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1050

Rack travel in mm : 15.10...15.20

Del.quantity cm3/: 20.5...20.7

100 s: (20.3...20.9)

Spread

cm3 : 0.3

100 s: (0.6)

rpm : 400.02nd speed

Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 1.7...2.1

100 s: (1.5...2.4)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

: 1050 Speed rom

: 205.5...207.5 Del.quantity 1000 : (203.5...209.5)

: 3.50 Spread cm3

: (6.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 104...112

Setting point:

Speed rpm : 800 Rack travel in mm: 0.6 Testing: 1st rack travel in: 14.10 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1125...1155 Speed 3rd rack travel in: 4.00 Speed rpm : 1135...1165 4th rack travel in: 1250 rom : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 6.2 Testing: : 100 Speed mq³ Mirrimum rack trave: 19.00 rpm : 400 Speed Rack travel in mm : 6.10...6.30 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 14.10 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 125.0...145.0 1000 s: (122.0...148.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 400 Speed Rack travel in mm : 6.60...6.80 Del.quantity cm3/: 17.5...21.5 1000 s: (15.0...24.0) Spread cm3: 3.50 1000 s: (5.50) Remarks:

ricinal itos

: CUM #3919723

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : LIE 5,6 B
Edition : 21.02.92
Replaces : G9.91
Test oil : ISO-4113

Combination no. : 0 403 474 008

Injection pump

Pump designation : PES47W100/720RS1181

EP type number : 0 413 404 107

Governor

Governor design. : RSV400...1000MW1A333

Governer no. : 0 420 085 118

Customer-spec. information Customer : LIEBHERR

Engine : 914

1st version kW : 120.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 049

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 15.3...15.5

100 s: (15.1...15.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm : 6.1...6.3 Del.quantity cm3/ : 2.0...2.4

100 s: (1.7...2.6) Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 3.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1000

Del.quantity : 153.0...155.0 1000 : (151.0...157.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 96...104

Setting point:

Speed rpm: 800 Rack travel in mm: 0.6

Testing:

1st rack travel in: 11.20 Speed rpm: 1040...1050 2nd rack travel in: 4.00 rpm : 1070...1100 Speed 4th rack travel in: 1175 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 5.7 Testina: : 100 Speed rpm Minimum rack trave: 19.00 rpm : 400 Rack travel in mm : 5.60...5.80 Rack travel in mm : 2.00 rpm : 480...540 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.20...12.30 rpm : 600 2nd speed Rack travel in m: 12.20...12.30 5th speed rpm : 450 Rack travel in m: 13.00...13.20 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 154.5...157.5 1000 s: (152.0...160.0) cm3 : 3.50 Spread 1000 s: (7.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.20 rpm : 1040...1050 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 130.0...140.0 1000 s: (127.0...143.0) Rack travel in mm : 19.00...21.00

Speed rpm : 400
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 20.0...24.0
1000 s: (17.5...26.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

LOW IDLE

Note remarks

Test sheet : MB 4,0 H 7
Edition : 21.02.92
Replaces : 09.91
Test oil : ISO-4113

Combination no. : 0 403 474 019

Injection pump

Fund designation : PES4MW100/720RS1151

EP type number : 0 413 404 104

Governor

Governor design. : RSV350...1200MW0A346

-3

Coverner no. : 3 420 085 179

Customer-spec. information Customer : MB-NFZ

Engine : OM 364 A

1st version kW : 77.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance $+ - \cdot : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 8.8...9.0

100 s: (8.6...9.2)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 6.0...6.8

Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm: 800

Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 5.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1200 Aneroid pressure h: 700

Del.quantity : 88.0...90.0

1000 : (86.0...92.0) cm3 : 3.50

Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 104...112

Setting point:

Speed rpm: 800 Rack travel in mm: 0.6

Testing:

1st rack travel in: 10.50 rom : 1240...1245 * Speed 2nd rack travel in: 4.00 Speed rpm : 1285...1298 3rd rack travel in: 4.00 Speed rpm : 1325...1355 4th rack travel in: 1450 rpm : 0.30...1.70Speed 5th rack travel in: 1240...1255 rpm : 10.50 Speed LOW IDLE 1 Testina: : 100 Speed rpm Minimum rack trave: 19.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 11.50...11.60 2nd speed : 600 rom Rack travel in m: 12.30...12.50 3rd speed rpm : 1000 Rack travel in m: 11.90...12.10 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm hPa : Pressure Rack travel : 9.80...9.90 mm Measurement 1/min : 500Speed 1st pressure hPa : 200 Rack travel in m: 10.40...10.50 2nd pressure hPa : 375 Rack travel in m: 11.50...11.80 3rd pressure hPa : 700 Rack travel in m: 12.30...12.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm : 600 Del.quantity cm3/: 83.5...86.5 1000 s: (81.0...89.0) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure n: rpm : 500 Speed Del.quantity cm3/: 46.0...48.0 1000 s: (44.0...50.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.50 Speed rpm : 1240...1245

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 75.0...85.0 1000 s: (72.0...88.0)

LOW IDLE

Remarks:

* Read off speed set under 1. Add 45...53 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Set pneumatic shutoff device to control-rod stop = 0.5...1.5 mm control-rod travel at 4.5 bar atmospheric pressure.
Test hydr. locking device for starting with 500...1000 hPa air pressure.

Note remarks

: MB Test sheet

: 28.02.92 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 403 474 022

Injection pump

Pump designation : PES4MW100/720RS1151

: 0 413 404 104 EP type number

Governor

: RSV350...1300MW0A329 Governor design.

-12

: 0 420 085 189 Coverner no.

Customer-spec. information Customer : MB-NFZ

: 0M364A Engine

: 79.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter

x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

: 0-90-180-270 Phasing

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

rpm : 12801st speed

Rack travel in mm : 10.80...10.90

Del.guantity cm3/: 8.2...8.4

100 s: (8.0...8.6)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 6.0...6.8 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280 Aneroid pressure h: 700

Del.quantity : 82.0...84.0 1000 : (80,0...86.0)

: 3.50 cm3

Spread 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 106...114

Setting point:

Speed rpm : 800 Rack travel in mm: 0.6

Testing:

1st rack travel in: 9.80 rpm : 1320...1330 Speed 2nd rack travel in: 4.00 Speed rpm : 1390...1420 4th rack travel in: 1550 nom : 0.30...1.70Speed LCW IDLE 1 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 6.4 Testing: rpm : 100 Speed Minimum rack trave: 19.00 Speed rpm : 350 Rack travel in mm : 6.00...6.80 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1280 Rack travel in m: 10.80...10.90 2nd speed rpm : 600 Rack travel in m: 11.70...11.80 3rd speed rpm : 1000 Rack travel in m: 11.70...11.80 4th speed rpm : 1175 Rack travel in m: 11.00...11.30 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : -Pressure : 9.80...9.90 Rack travel mm Measurement 1/min ~~ 30 Speed 1st pressure hPa : 200 Rack travel in m: 10.70...10.90 2nd pressure hPa : 300 Rack travel in m: 11.20...11.40 3rd pressure hPa : 700 Rack travel in m: 11.70...11.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 : 600 rpm . Del.quantity cm3/: 75.0...78.0 1000 s: (72.5...80.5)

Spread cm3:5.00 1000 s: (7.0) Aneroid pressure h: -Speed rpm:500 Del.quantity cm3/:46.0...48.0 1000 s: (44.0...50.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.80 Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.00...6.80
Del.quantity cm3/: 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Test hydr. locking device for starting with 500...1000 hPa air pressure.

.

Note remarks

Test sheet

Edition : 28.02.92

Replaces

: ISO-4113 Test pil

Combination no. : 0 403 474 023

Injection pump

Pump designation : PES4MW100/720RS1212

: 0 413 404 114 EP type number

Governor

Governor design. : RSV350...1300MW0A329

-13

: 0 420 085 191 Governer no.

Customer-spec, information Customer : MR-NF7

: OM 364 LA Engine

1st version kW : 100.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

: 0-90-180-270 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rom: 1280

Rack travel in mm : 13.20...13.30

Del.guantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm: 6.5...6.8

Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 4.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Aneroid pressure h: 700

Del.quantity : 101.0...103.0 1000 : (99.0...105.0)

: 3.50

cm3

1000 : (6.00)

RATED SPEED

Spread

1st version

Control lever

position degrees: 114...122

Setting point:

rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 12.20 Speed rpm : 1320...1330

2nd rack travel in: 4.00

rpm : 1385...1415 Speed

4th rack travel in: 1450

rpm : 0.30...1.70 Speed

LOW IDLE 1 Control Lever

position degrees: 82...90 Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm: 6.6

Testing:

rpm : 100 Speed Minimum rack trave: 19.00 rpm : 350 Speed

Rack travel in mm : 6.50...6.80

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed man hPa : -Pressure

: 10.20...10.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 200 Rack travel in m: 10.90...11.10

2nd pressure hPa : 400

Rack travel in m: 12.30...12.50 3rd pressure hPa : 700

Rack travel in m: 13.20...13.30

FUFL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 600 Speed

Del.quantity cm3/: 86.0...89.0 1000 s: (83.5...91.5)

cm3 : 5.00 Spread

1000 s: (7.0)

Aneroid pressure h: -

rpm_ : 500 Speed

Del.quantity cm3/: 36.0...38.0 1000 s: (34.0...40.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20

rpm : 1320...1330 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 85.0...95.0

1000 s: (82.0...98.0)

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 6.50...6.80 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Test hydr. Locking device for starting with 500...1000 hPa air pressure.

Note remarks

Test sheet : LIE : 22.01.92 Edition

Replaces

Test o'L : ISO-4113

: 0 403 476 081B Combination no.

Injection pump

Pump designation : PES6MW100/720RS1196

EP type number : 0 413 406 184

Governor

Governor design. : RSV350...1050MW0A338

: 0 420 085 138 Governer no.

Customer-spec. information Customer : LIEBHERR

: D 916 T Engine

: 150.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 049

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.40...3.50 Prestroke mm : (3.35...3.55) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 12.9...13.1

100 s: (12.7...13.3)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.02nd speed Rack travel in mm: 4.0...4.4 Del.quartity cm3/: 1.0...1.4 100 s: (0.7...1.6)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 750

: 129.0...131.0 Del.quantity 1000 : (127.0...133.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 88...96

Setting point:

Speed rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 9.80

rpm : 1030...1045 Speed 2nd rack travel in: 4.00 rpm : 1050...1080 Speed 3rd rack travel in: 4.00 rpm : 1060...1090 Speed 4th rack travel in: 1200 rom : 0.30...1.70 Speed LOW IDLE 1 Control Lever position degrees: 63...71 Setting point w/cut bumper spring : 400 Speed rpm Rack travel in mm: 3.7 Testina: Speed rpm : 100 Minimum rack trave: 19.00 : 400 rpm Rack travel in mm: 3.50...3.90 Rack travel in mm: 2.00 Speed rpm : 420...480 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m. 10.80...10.90 2nd speed rom : 500 Rack travel in m: 10.80...10.90 3rd speed rpm : 800 Rack travel in m: 10.80...10.90 5th speed rpm : 400 Rack travel in m: 12.30...12.50 Aneroid/Altitude Compensator Test 1st version Setting : 550 Speed rpm hPa : -Pressure : 9.60...9.70 Rack travel mm Measurement 1/min: 550 Speed 1st pressure hPa : 400 Rack travel in m: 10.20...10.40 2nd pressure hPa : 750 Rack travel in m: 10.80...10.90 FUEL DELIVERY CHARACTERISTICS 1st version

cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: -Speed rpm : 550 Del.quantity cm3/ : 111.0...113.0 1000 s: (109.0...115.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.80 rpm : 1030...1045 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm : 19.50...21.00 LOW IDLE Speed rpm : 400 Rack travel in mm : 4.00...4.40

Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3 : 3.501000 s: (5.00)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

Speed

Aneroid pressure h: 750

rpm : 500

Del.quantity cm3/: 130.0...133.0 1000 s: (127.5...135.5)

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : IHC 7,7, B : 14.02.92 Test sheet Edition : 04.91 Replaces Test oil : ISO-4113 Combination no. : 0 403 476 106 Injection pump : PES6MW100/320RS1213 Pump designation EP type number : 0 413 406 203 Governor : RSV350...750MW7A345 Governor design. : 0 420 085 168 Governer no. Customer-spec. information Customer : NAVISTAR : DT-466 Engine ist version kW : 159.0 Rated speed : 1500 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 038 Inlet press., bar : 2.80 Test nozzle holder : 1 688 901 101 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test Lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.25...3.35 Prestroke mm : (3.20,..3,40) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Phasing : D-60-120-180-240-300 Tolerance + - * : 0.50 (0.75) BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 14.20...14.30 Del.quantity cm3/: 16.2...16.4 100 s: (16.0...16.6) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 350.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) Spread cm3 : 0.3100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...1.00 Governor spring pre-tension Click setting x : 5.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 700 Speed : 162.5...164.5 Del.quantity 1000 : (160.5...166.5) : 3.50 Spread cm3 : (6.00) 1000 RATED SPEED 1st version Control lever position degrees: 90...98

Setting point:

rpm Rack travel in mm : 0.6

Speed

Testina: 1st rack travel in: 13.20 rpm : 750...760 Speed 2nd rack travel in: 4.00 Speed rpm : 795...805 3rd rack travel in: 4.00 rpm : 800...810 Speed 4th rack travel in: 850 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 68...76 Setting point w/out bumper spring rpm : 350 Rack travel in mm : 5.3 Testing: Speed : 100 LDW. Minimum rack trave: 19.00 rpm : 350 Rack travel in mm : 5.20...5.40 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.20 rpm : 750...760 Speed STARTING FUEL DELIVERY Speed man : 100 Del.quantity cm3/: 160.0...180.0 1000 s: (155.0...185.0) Rack travel in mm: 19.00...21.00 LOW IDLE Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5) cm3 : 3.50Spread 1000 s: (5.00) Remarks:

Note remarks

Test sheet : LIE Edition : 21.02.92

Replaces

Test oil : ISO-4113

Combination no. : 0 403 476 112

Injection pump

Pump designation : PES6MW100/720RS1225

: 0 413 406 212 EP type number

Governor

: RSV400...1000MW1A338 Governor design.

-1

: 0 420 085 184 Governer no.

Customer-spec. information : LIEBHERR Customer

: 0 916 TI Engine

1st version kW : 173.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 049

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 14.0...14.2

100 s: (13.8...14.4)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 1.4...1.8

100 s: (1.1...2.0) cm3 : 0.3

Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000Aneroid pressure h: 750

: 140.5...142.5 Del.quantity

1000 : (138.5...144.5) cm3 : 3.50

Spread 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 98...106

Setting point:

Speed rom Rack travel in mm: 0.6

Testing:

1st rack travel in: 12.00 Speed rpm : 1040...1050 2rd rack travel in: 4.00 Speed rpm : 1075...1105 3rd rack travel in: 4.00 rpm : 1085...1115 Speed 4th rack travel in: 1200 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring **MCLU** Rack travel in mm: 5.6 Testing: Speed rpm : 100 Minimum rack trave: 19.00 : 400 Speed man Rack travel in mm : 5.40...5.90 TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 13.00...13.10 2nd speed rpm : 500 Rack travel in m: 13.10...13.30 3rd speed rpm : 700 Rack travel in m: 13.00...13.20 rpm : 450 5th speed Rack travel in m: 13.80...14.10 Aneroid/Altitude Compensator Test 1st version Setting : 550 Speed rpm Pressure hPa : -: 10.90...11.10 Rack travel mm Measurement 1/min: 550 Speed 1st pressure hPa : 300 Rack travel in m: 11.30...11.40 2nd pressure hPa : 450 Rack travel in m: 12.30...12.60 3rd pressure hPa : 750 Rack travel in m: 13.10...13.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 750

rpm : 500

Del.quantity cm3/: 136.5...139.5 1000 s: (134.0...142.0) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: -Speed rpm: 550
Del.quantity cm3/: 100.5...102.5 1000 s: (98.5...104.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.00 rpm : 1040...1050 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 110.0...120.0 1000 s: (107.0...123.0) Rack travel in mm: 19.50...21.00

LOW IDLE

Speed rpm : 400 Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 14.0...18.0 1000 s: (11.5...20.5) cm3 : 3.50 Spread 1000 s: (5.00)

Remarks:

Speed

Note remarks

Test sheet : MB

: 28.02.92 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 403 476 114

Injection pump

: PES6MW100/720RS1131-Pump designation

: 0 413 406 165 EP type number

Governor

: RSV750...1100MWDA325 Governor design.

: 9 420 985 188 Governer no.

Customer-spec, information Customer : MB-NFZ

Engine : 0M366LA

: 170.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 089

Outside diameter

x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70 : (3.55...3.75) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° ; 0.50 (0.75)

BASIC SETTING

rpm: 1080 1st speed

Rack travel in mm: 13.00...13.10

Del.quantity cm3/: 10.3...10.5

100 s: (10.1...10.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 5.8...6.3
Del.quantity cm3/ : 1.0...1.4
100 s: (0.7...1.6)
Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1080 Speed

: 103.0...105.0 Del.quantity 1000 : (101.0...107.0)

: 3.50 cm3

Spread : (6.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 82...90

Setting point:

Speed rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 12.00

rpm : 1120...1125 *

2nd rack travel in: 4.00

rpm : 1145...1158 Speed

3rd rack travel in: 4.00

Speed rpm: 1151...1163 4th rack travel in: 1550

Speed rpm : 0.30...1.70

LOW IDLE 1 Control Lever

position degrees: 70...78

Setting point w/out bumper spring Speed rpm : 750

Rack travel in mm: 6.0

Testina:

rpm : 100 Speed Minimum rack trave: 19.00 rpm : 750

Rack travel in mm : 5.80...6.30

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1080

Rack travel in m: 13.00...13.10

2nd speed rpm : 925

Rack travel in m: 13.40...13.60 3rd speed rpm : 750

Rack travel in m: 13.90...14.00

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 750 Speed

Del.quantity cm3/: 108.0...111.0

1000 s: (105.5...113.5) cm3 : 5.00

Spread

1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

rpm : 1120...1125 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 5.80...6.30

Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

Test hydr. locking device for starting

with 500...1000 hPa air pressure.

KO7

Note remarks

Test sheet

: IHC

Edition

: 14.02.92

Replaces

Test oil

: ISO-4113

Combination no. : 0 403 476 115

Injection pump

Pump designation : PES6MW100/320RS1226

EP type number

: 0 413 406 213

Governor

Governor design. : RSV350...750MW7A345~

Governer no.

: 0 420 085 190

Customer

Customer spec. information : NAVISTAR

Engine

: DT-466

1st version kW

: 185.0

Rated speed

: 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

assembly

: 1 688 901 101

Ocening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0.6

Test lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.45...3.55 : (3.40...3.60) Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-130-240-300

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 700

Rack travel in mm : 14.70...14.80

Del.quantity cm3/: 19.3...19.5

100 s: (19.1...19.7)

Spread

Spread

cm3 : 0.3

100 s: (0.6)

rpm : 350.0 2nd speed

Rack travel in mm: 5.4...5.6 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rom : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 700

Del.quantity

: 193.0...195.0

1600 : (191.0...197.0)

Spread

cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 82...90

Setting point:

Speed

rpm

Rack travel in mm: 0.6

K08

Testina: 1st rack travel in: 13.70 Speed rpm : 750...760 2nd rack travel in: 4.00 rpm : 795...805 Speed 3rd rack travel in: 4.00 rpm : 800...810 Speed 4th rack travel in: 850 rpm : 0.30...1.70Speed LOW IDLE 1 Control lever position degrees: 64...72 Setting point w/out bumper spring rpm Rack travel in mm : 5.5 Testing: rpm : 100 Speed Minimum rack trave: 19.00 : 350 Speed rom Rack travel in mm : 5.40...5.60 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.70 speed rpm : 750 .760 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 160.0...180.0 1000 s: (155.0...185.0) Rack travel in mm: 19.00...21.00 LOW IDLE rpm : 350 Speed Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) cm3 : 3.50 Spread 1000 s: (5.00)

Remarks:

: IHC #1819368C91

Note remarks

Test sheet

Edition

: 28.02.92

Replaces

Test oil

: ISO-4113

Combination no.

: 0 403 476 116

Injection pump

Pump designation : PES6MW100/720RS1131

EP type number

: 0 413 406 123

Governor

Governor design.

: RSV350...1300MW0A329

-14

Governer no.

: 0 420 085 192

Customer

Customer-spec. information : MB-NFZ

Engine

: OM 366 A

: 125.0

1st version kW Rated speed

: 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Openina

pressure, bar

: 172...175

Test lines

: 1 680 750 089

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm : 1280

Rack travel in mm: 10.50...10.60

Del.quantity cm3/: 8.8...9.0

100 s: (8.6...9.2)

Spread

cm3 : 0.3

100 s: (0.6)

rpm : 350.0 2nd speed

Rack travel in mm: 6.0...6.2

Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6) Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Speed Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1280

Aneroid pressure h: 800

Del.quantity : 88.0...92.0)

Spread

cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 105...113

Setting point:

Speed

Rack travel in mm: 0.6

Testing:

1st rack travel in: 9.50

rpm

Speed

rpm : 1330...1335

2nd rack travel in: 4.00

rpm : 1410...1423 Speed 3rd rack travel in: 4.00 Speed rpm : 1416...1428 4th rack travel in: 1550 rom : 0.30...1.70 Speed LOW IDLE 1 Control Lever position degrees: 75...83 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 6.1 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm: 350 Rack travel in mm : 6.00...6.20 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version rpm : 1280 1st speed Rack travel in m: 10.50...10.60 2nd speed rpm : 800 Rack travel in m: 11.20...11.30 3rd speed rpm : 1100 Rack travel in m: 10.80...11.00 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 Pressure hPa : -9.20...9.30 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 300 Rack travel in m: 9.70...9.90 2nd pressure hPa : 400 Rack travel in m: 10.50...10.70 3rd pressure hPa : 800 Rack travel in m: 11.20...11.30 FUEL DELIVERY CHARACTERISTICS

Spread cm3: 5.00 1000 s: (7.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 49.0...51.0 1000 s: (47.0...53.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.50 Speed rpm : 1330...1335

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Test hydr. Locking device for starting with 500...1000 hPa air pressure.

1st version

Aneroid pressure h: 800

Speed rpm: 800 Del.quantity cm3/: 88.0...91.0 1000 s: (85.5...93.5)

Note remarks

: CUM 8,3 a11 Test sheet Edition : 04.02.92 : 08.06.90 Replaces

Test oil : ISO-4113

Combination no. : 9 400 230 089

Injection pump

Pump designation : PES6A100D320/3RS2691

: 9 410 230 025 EP type number

Governor

: RSV400...1100A0C2190 Governor design.

-3R

Governer no. : 9 420 234 125

Customer-spec. information Customer : C.D.C.

: 6 C 8.3 Engine

: 129.0 1st version kW : 2200 Rated speed : ? 2nd version kW : ? 3rd version kW

4th version kW : ?

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Cverflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm: 10.50

: 1-5- 3- 6- 2- 4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm: 10.60...10.70

Del.quantity cm3/: 9.5...9.7

100 s: (9.3...9.9)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 400.02nd speed

Rack travel in mm: 5.8...6.0 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 95.5...97.5 Del.quantity

1000 : (93.5...99.5)

: 4.00 Spread cm3

1000 : (6.50)

2nd version

rpm : 1100 Speed

Aneroid pressure h: -

Del.quantity cm3/: 126.5...128.5

1000 s: (124.5...130.5)

Spread cm3 : 1000 s: 3rd version speed rpm :	(6.0) 1250	† †	4th version Control lever position degrees: 4654
Aneroid pressure h: Del.quantity cm3/: 1000 s: Spread cm3 : 1000 s: 4th version Speed rpm :	121.0123.0 (119.0125.0) 3.5 (6.0)	+ + + + + + + + + + + + + + + + + + + +	Testing: 1st rack travel in: 9.70 Speed rpm: 11401150 2nd rack travel in: 4.00 Speed rpm: 12001230 4th rack travel in: 1300
Aneroid pressure h: Del.quantity cm3/: 1000 s: Spread cm3 : 1000 s:	- 96.598.5 (94.5100.5) 3.5		Speed rpm : 0.301.40 LCW IDLE 1 Control lever position degrees: 1927 Setting point w/out bumper spring
RATED SPEED 1st version Control lever		†	Speed rpm : 400 Rack travel in mm : 5.4 Testing:
position degrees: Testing:	4149	Ī	Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 400
ist rack travel in: Speed rpm : 2nd rack travel in: Speed rpm :	11401150 4.00 11901220	† † †	Rack travel in mm: 5.806.00 Rack travel in mm: 2.00 Speed rpm: 500560
4th rack travel in:	11901230	† †	Torque control curve - 4th version 1st speed rpm : 1100 Rack travel in m: 10.710.8
2nd version Control Lever position degrees:	3947	+	2nd speed rpm : 750 Rack travel in m: 12.312.5 FUEL DELIVERY CHARACTERISTICS
2nd rack travel in: Speed rpm: 3rd rack travel in: Speed rpm:	11401150 4.00 12001230 4.00 12051235	+++++++++	2nd version Speed rpm : 750 Del.quantity cm3/ : 122.0126.0 1000 s: (120.0128.0)
4th rack travel in: Speed rpm: 3rd version Control lever position degrees:	0.301.40	† † †	3rd version Speed rpm : 750 Del.quantity cm3/ : 122.0126.0 1000 s: (120.0128.0)
Testing: 1st c-rod trav.mm : Speed rpm : 2nd rack travel in:	11.00 12901300 4.00	+++++++++++++++++++++++++++++++++++++++	4th version Speed rpm : 750 Del.quantity cm3/ : 119.5123.5 1000 s: (117.5125.5)
Speed rpm: 3rd rack travel in: Speed rpm: 4th rack travel in: Speed rpm:	13601390 1450	+++++++++++++++++++++++++++++++++++++++	BREAKAWAY 1st version

1mm rack travel less than

full load rack tr: 9.60

rom : 1140...1150 Speed

2nd version

1mm rack travel less than full load rack tr: 11.70 Speed rpm : 1140...1150

3rd version

1mm rack travel less than full load rack tr: 11.00

rpm : 1290...1300 Speed

4th version

1mm rack travel less than

full load rack tr: 9.70

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 135.0...155.0

1000 s: (130.0...160.0)

Rack travel in mm: 19.00...21.00

LOW IDLE

Speed rpm : 400 Rack travel in mm : 5.80...6.00 Del.quantity cm3/ : 16.0...20.0 1000 s: (13.5...22.5)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: VERS.1=CDC# 3915960

: 2=3909940,3=3907180

: 4=3906545

Adjust stop lever to 0.5...1.0 mm

before stop.

Start-of-delivery mark 11° cam angle

after start of delivery cyl. 1

Note remarks

Test sheet Edition : 4.3.92

Replaces

Test oil : ISO-4113

Combination no. : 9 400 230 097

Injection pump

: PES6A100D320/3RS2691 Pump designation

EP type number : 9 410 230 025

Governor

: RSV400...1100A0c2190 Governor design.

-8R

: 9 420 234 137 Governer no.

Cust, part no. : 13

Customer spec, information Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : ? 2nd version kW

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 D47

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 10.50

Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom : 1050

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 12.2...12.4

100 s: (12.0...12.6)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400 2nd speed

Rack travel in mm : 5.8...6.0 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm: : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

. 122.5...124.5 1000 : (120.5...126.5) Del.quantity

: 3.50 Spread cm3

1000 : (6.00)

2nd version

Speed rpm : 1000 Del.quantity cm3/: 119.0...121.0

1000 s: (117.0...123.0) cm3 : 3.5

Spread 1000 s: (6.0)

RATED SPEED

1st version Control lever

position degrees: 38...46

Testina:

1st rack travel in: 11.40

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

Speed rpm: 1135...1165 3rd rack travel in: 4.00

rpm : 1140...1170 Speed

4th rack travel in: 1200

rpm : 0.30...1.40Speed

2nd version

Control lever

position degrees: 34...42

Testina:

1st rack travel in: 11.10

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rom : 1075...1105 Speed

3rd rack travel in: 4.00

Speed rpm : 1080...1110 4th rack travel in: 1150

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 19...297 Setting point w/out bumper spring

rpm : 400

Rack travel in mm: 5.2

Testina:

Speed rpm : 100 Minimum rack trave: 19.00

rpm : 400 Speed

Rack travel in mm: 5.80...6.00 Rack travel in mm: 2.00

: 440...500 Speed rpm

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40

rpm : 1090...1100 Speed

2nd version

1mm rack travel less than

full load rack tr: 11.10

Speed

rpm : 1040...1050

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 130.0...150.0

1000 s: (125.0...155.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.80...6.00
Del.quantity cm3/: 16.0...20.0
1000 s: (13.5...22.5)

cm3 : 3.50 1000 s: (5.50) Spread

Remarks:

: VERS.1=CDC # 3906547

: VERS.2=CDC # 3906551

Adjust stop lever to 0.5...1.0 mm

before stop.

Start-of-delivery mark at 10° cam

rotation angle after start of delivery,

cylinder 1

Note remarks

: CUM 8,3 a13 Test sheet Edition : 05.03.92 : 01.02.90 Replaces Test oil : ISO-4113

Combination no. : 9 400 230 099

Injection pump

Pumo designation : PES6A100D320/3RS2691

: 9 410 230 025 EP type number

Governor

: RSV400...1050A0c2190 Governor design.

-10R

: 9 420 234 142 Governer no.

Customer-spec. information Customer : C.D.C.

: 6 0 8.3 Engine

1st version kW : 89.0 Rated speed : 2100 2nd version kW 3rd version kW : ? 4th version kW 5th version kw

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 014 Test lines

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95)
Rack travel in mm : 10.50

: 1-5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 9.60...9.70

Del.quantity cm3/: 8.2...8.4

100 s: (8.0...8.6)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 400 2nd speed

Rack travel in mm: 5.6...5.8 Del.guantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.6 100 s: (0.8) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 82.0...84.0 Del.quantity 1000 : (80.0...86.0)

Spread : 4.00 cm3 1000 : (6.50)

2nd version

Speed rpm: 1100 Del.quantity cm3/: 105.5107.5	Speed rpm : 11801210 3rd rack travel in: 4.00 Speed rpm : 11851215 4th rack travel in: 1250 Speed rpm : 0.301.40
Speed rpm : 1100 Del.quantity cm3/: 88.090.0 1000 s: (86.092.0) Spread cm3 : 3.5	4th version Control lever position degrees: 4149
1000 s: (6.0) 4th version Speed rpm : 1050 Del.quantity cm3/: 108.5110.5 1000 s: (106.5112.5) Spread cm3 : 3.5 1000 s: (6.0) 5th version Speed rpm : 1000 Del.quantity cm3/: 98.5100.5 1000 s: (96.5102.5) Spread cm3 : 3.5 1000 s: (6.0)	Testing: 1st rack travel in: 10.40 Speed rpm: 10901100 2nd rack travel in: 4.00 Speed rpm: 11401170 3rd rack travel in: 4.00 Speed rpm: 11501180 4th rack travel in: 1200 Speed rpm: 0.301.40 5th version Control lever position degrees: 3644
RATED SPEED 1st version Control lever position degrees: 4149	Testing: 1st rack travel in: 9.80 Speed rpm : 10401050 2nd rack travel in: 4.00 Speed rpm : 10851115
Testing: 1st rack travel in: 8.60 Speed rpm : 10951105 2nd rack travel in: 4.00 Speed rpm : 11251155 4th rack travel in: 1200 Speed rpm : 0.301.46	3rd rack travel in: 4.00 Speed rpm : 10901120 4th rack travel in: 1200 Speed rpm : 0.301.40 LOW IDLE 1 Control lever position degrees: 2331 Setting point w/out bumper spring
2nd version Control lever position degrees: 6169	+ Speed rpm : 400 + Rack travel in mm : 5.2
Testing: 1st rack travel in: 10.30 Speed rpm: 11401150 2nd rack travel in: 4.00 Speed rpm: 11951225 3rd rack travel in: 4.00 Speed rpm: 12051235 4th rack travel in: 1250 Speed rpm: 0.301.40	Testing: Speed rpm: 100 Minimum rack trave: 19.00 Speed rpm: 400 Rack travel in mm: 5.605.80 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm: 1050 Rack travel in m: 9.609.70
3rd version Control lever position degrees: 4553	2nd speed rpm : 750 Rack travel in m: 10.4010.60 Torque control curve - 3rd version
Testing: 1st c-rod trav.mm: 9.00 Speed rpm: 11401150 2nd rack travel in: 4.00	1st speed rpm : 1100 Rack travel in m: 10.010.1 2nd speed rpm : 800 Rack travel in m: 10.510.7

FUEL DELIVERY CHARACTERISTICS

1st version

Speed (TDI)

Del.quantity cm3/: 86.5...90.5 1000 s: (84.5...92.5)

3rd version

: 800 Speed ווימיו

Del.quantity cm3/: 92.0...96.0 1000 s: (90.0...98.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.60

rpm : 1095...1105 Speed:

2nd version

1mm rack travel less than

full load rack tr: 10.30

rpm : 1140...1150 Speed

3rd version

1mm rack travel less than

full load rack tr: 9.00

rpm : 1140...1150 Speed

4th version

1mm rack travel less than

full load rack tr: 10.40 Speed rpm : 1090...1100 Speed

5th version

1mm rack travel less than

full load rack tr: 9.80

: 1040...1050 Speed COM

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 135.0...155.0

1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)

cm3 : 6.00Spread

1000 s: (8.00)

Remarks:

: 1.VERS=CDC # 3915964 Adjustment without torque-control3906537 spring retainer with 1 mm less 5=3906540 control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

K19

Note remarks

Test sheet : CUM 8,3 k : 05.03.92 Edition : 08.06.90 Replaces Test oil : ISO-4113

Combination no. : 9 400 230 102

Injection pump

Pump designation: PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1050AJC2216

: 9 420 234 146 Governer no.

Customer-spec, information Customer : C.D.C.

: 6 CTA 8.3 Engine

: 141.7 1st version kW : 2100 Rated speed : 2 2nd version kW

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Lenath mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm: 10.50

: 1-5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasina

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 10.0...10.2

100 s: (9.8...10.4)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

cm3 : 0.6Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 100.5...102.5 Del.quantity 1000 : (98.5...104.5)

Spread cm3: 4.00 1000 : (6.50)

2nd version

Speed rpm : 1100

Del. quantity cm3/: 114.5...116.5

1000 s: (112.5...118.5)

cm3 : 3.5 Spread

1000 s: (6.0)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testina:

1st rack travel in: 10.10

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1160...1190 Speed

3rd rack travel in: 4.00

Speed rpm : 1160...1190 4th rack travel in: 1250 Speed rpm : 0.30...1.40

2nd version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 11.15

Speed rpm: 1140...1150
2nd rack travel in: 4.00
Speed rpm: 1190...1220
4th rack travel in: 1300

rpm : 0.30...1.40Speed

LOW IDLE 1

Control lever

position degrees: 25...34

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm: 5.5

Testing:

Speed riphi

Minimum rack trave: 19.00

Speed rpm : 400 Rack travel in mm : 5.90...6.10

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050
Rack travel in m: 11.10...11.20

: 750 2nd speed rpm

Rack travel in m: 12.60...12.80

Torque control curve - 2nd version

1st speed rpm : 1100

Rack travel in m: 12.1...12.2 and speed rpm : 750

2nd speed

Rack travel in m: 13.4...13.6

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rpm

Del.quantity cm3/: 126.0...130.0 1000 s: (124.0...132.0)

2nd version

Speed rpm : 750 Del.quantity cm3/: 135.0...138.0 1000 s: (132.5...140.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

rpm : 1090...1100 Speed

2nd version

1mm rack travel less than

full load rack tr: 11.15

rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm ; 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 18.0...22.0
1000 s: (15.5...24.5)

Spread

cm3 : 6.00

1000 s: (8.00)

Remarks:

: 1.VERS= CDC #3915968

: 2.VERS= CDC #3908326

Adjust stop lever to 0.5...1.0 mm

before stop.

Adjustment without torque-control spring retainer with 1 mm less

control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Note inst. in remarks column

Test scheet

Edition : 10.03.92

replaces

Calibrating oil : ISO 4113

Injection pump : VE4/10F21COL4:4-1

Type number : 0 460 404 073

Customer—specific information

Customer

: HR 425 CLIRS Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil • C return temp.

with thermometer : 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle holder

: 1 688 901 022 assembly

Opening

Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery mm: -Prestroke

(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1000 Charge press. hPa: 1000 Setting value mm: 1,2...1,6

Shutoff

electromagnet Volt: 12,0

Supply-pump pressure

Speed 1/min: 1000

Charge press hPa: 1000 Setting value bar: 4,7...5,3 Shutoff

electromagnet Volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1500 Charge press. hPa: 1000

Del. quantity cm3/ 1000s.: 65,5...66,5

Shutoff

electromagnet Volt: 12,0 cm3/: 3,0 Dispersion 1000s .: -

Full-load del. w/out charge press.:

1/min: 700 Speed

Del. quantity cm3/

1000s.: 43,0...44,0

Shutoff

electromagnet Volt: 12,0

Low-idle speed regulation

1/min: 450 Charge press hPa: -

Del. quantity cm3/

1000s.: 13,0..17,0

Shutoff

electromagnet Volt: 12,0 Del. quantity cm3/: 3,0 1000s.: -

Full-load speed regulation

1/min: 2300 Speed Charge press hPa: 1000

Del. quantity cm3/

1000s.: 40,0...46,0

Shutoff

electromagnet Volt: 12,0

Start:

1/min: 100 Speed Charge press hPa: -Del. quantity cm3/: -1000s.: 35,0 mind

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1500 Speed Charge press hPa: cm3/ Inj.-qty.

difference 1000s.: 7,0...9,0

Shutoff

electromagnet Volt: 12,0

K22

SP press.—dif.measu	rement	+ 0	verflow :	41,683,3
			vontety 07/100	(24 4 09 7)
pompa di mandata (F		† Y	uantity cm3/10s:	(20,090,3)
1.Speed 1/min:			nd speed 1/min:	
Charge press hPa:	_	+ c1	harge press. hPa:	1000
Supply pump		1 9	hutoff	
				12 0
pressure	* • • • • • • • • • • • • • • • • • • •	+ =	lectromagnet Volt:	16,0
difference bar:	0,10,3		verflow:	55,5138,8
Shutoff	·	∔ α	uantity cm3/10s:	(40.5153.3)
electromagnet Volt:	12	1 7		(10/3000130/01
etecti dilagret vott.	12	T .	.1.2	t 1
		+ 14	elivery-quant. and	breakaway char.
inspection pumb tes	t specifications	+		
Test specifications	in narentheses	1		
rest spectifications	iii pui criciieses	1.	nd speed 1/min:	700
Timing-device chara	cteristic:	+ 0	harge-air pressure	-setting
-		∔ n	oint hPa:	350
1st speed 1/min:	1000			7.0
				170
Charge press hPa:	1000		hutoff	
TD travel mm:	1,21,6	+ e	lectromagnet Volt:	12.0
Town •	(0,72,1)	T 9	el. quantity cm3/: 1000s.:	55 5 56 5
1885)	40.0	T	4000c	157 E ED EN
electromagnet Volt:	12,0	† _	10005.:	(23,228,2)
2nd speed 1/min:	1500	+ 2	nd speed 1/min:	2500
	1000		harge press. hPa:	
				1000
TD travel mm:			hutoff	
mm:	(3,75,1)	+ e	lectromagnet Volt:	12,0
Shutoff			el. quantity cm3/:	
	12.0	1	4000c	0,00,0
electromagnet Volt:	12,0	† _	10005.:	
3rd speed 1/min:	2100	+ 3	rd speed 1/min:	2300
Charge press hPa:	1000	\perp c	harge press. hPa:	1000
			hutoff	,000
	7,07,8			40.0
mm:	(6,78,1)	+ e	lectromagnet Volt:	12,0
Shutoff	·	+ D	el. quantity cm3/:	41.045.0
electromagnet Volt:	12.0	1		(39,047,0)
etern chagner vott.	12,0	T ,		
			th speed 1/min:	
Supply-pump pressur	e characteristic:	+ C	harge press. hPa:	1000
a refer to the contract of		1 5	hutoff	
1at annual 1/min.	מחל			12.0
1st speed 1/min:		T	lectromagnet Volt:	12,0
Charge press. hPa:	1000	+ D	el. quantity cm3/:	63,066,0
Supply-pums		+	1000s.:	(61,567,5)
	3,84,4	1 5	th speed 1/min:	1500
pressure bar:	3/04/4	T	th speed 1/11/11.	1200
Shutoff			harge press. hPa:	1000
electromagnet Volt:	12.0	+ S	Shutoff	
2nd speed 1/min:	1000	1 0	electromagnet Volt:	12 0
Charge press. hPa:	1000	† V	el. quantity cm3/:	
Supply-pump		+	1000S.:	(64,068,0)
pressure bar:	4,75,3	+ 6	th speed 1/min:	700
Shutoff	.,,.		harge press. hPa:	
	40.0			1000
electromagnet Volt:	12,0		hutoff	
3rd speed 1/min:	2100	+ e	lectromagnet Volt:	12,0
	1000		el. quantity cm3/:	
	1000		40000 ·	(41 0 70 0)
Supply-pump		† -		(64,070,0)
pressure bar:	7,68,2	+ 7	th speed 1/min:	700
Shutoff	•		harge press. hPa:	
	12.0		Shutoff	
electromagnet Volt:	16,0			42.0
			electromagnet Volt:	
Overlow quantity at	overflow valve:		el. quantity cm3/:	
TO ALL THE MANIET OF ME	The state of the s	1		(41,046,0)
Ant money At	700	T	10003.:	(41704070)
1st speed 1/min:		†		
Charge press. hPa:	1000	+ M	Mech. shutoff:	
Shutoff		1		
	12.0	T -	lasta shitsff.	
electromagnet Volt:	16,0	7 5	lectr. shutoff:	

electromagnet Volt: 12,0 Del. quantity cm3/: 45,0...65,0 1st speed 1/min: 450 Charge press. hPa: -Del. quantity cm3/: 0,0...3,0 1000s.: -1000s.: -2nd speed Idle delivery: Shutoff 1/min: 450 1st speed Shutoff electromagnet Volt: 12,0 Del. quantity cm3/: 13,0...17,0 1000s.: (10,0...20,0) 2nd speed 1/min: 500 2nd speed Shutoff Cut-in electromagnet Volt: 12.0 Del. quantity cm3/: 2.5...7,5 1000s.: (2.0...8,0) min voltage Rated voltage 1/min: 600 3rd speed Shutoff electromagnet Volt: 12.0 Designation Del. quantity cm3/: 0,0...5,0 KF 1000s.: -MS Load-dependent start of delivery: SVS max. Ini.-qty.dif.measurement: LDA stroke 1st speed 1/min: 1500 Charge press. hPa: Inj.-qty. cm3/ : 13,0...19,0 *
difference 1000s.: -Angle for pot. Shutoff Supply voltage electromagnet Volt: 12,0 pot. Output volt TD-travel dif.measurement: pot. correttore anticipo iniezione (SV): 1st speed 1/min: 1500 Remarks: Charge press. hPa: -: 1,4...1,6 TD-travel ...303 Shutoff electromagnet Volt: 12,0 Part-load del.at 3rd inj.-qty. terza fermo della portata stop (EGR set) scarico) (ARF) gaz d'échappement-ARF) mm: 12,0 Spacing 1/min: 1000 1st speed Charge press. hPa: 1000 Shutoff electromagnet Volt: 12,0 Del. quantity cm3/: 42,5...44,5 1000s.: (41,0...46,0) Automatic starting fuel delivery: 1st speed 1/min: 400

1/min: 550 Charge press. hPa: electromagnet Volt: 12,0 Del. quantity cm3/: 25,0...45,0 1000s.: -Shutoff electromagnet: : 10,0 : 12,0 Mounting and assembly dimensions: mm: 3,2...3,4 mm: 5,2...5,6 mm: 0,6...1,0mm: 4,3 mm: 7.0 Ajustement Potentiometer: *: 45 volt: 5,0 volt: 2,95 Overflow restriction 0.55 mm - Part No.

Shutoff

Charge press. hPa: -

Note remarks

Test sheet : KHD : 13.03.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 646 266AA

Injection pump

Pump designation : PE6A95D41OLS2587 : 0 410 696 983 EP type number

Governor

Governor design. : RQV300...1150AB1088L

: 0 420 212 115 Governer no.

Customer-spec. information Customer : KHD

: F6L413 FW Engine

: 92.0 1st version kW Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: C 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.50...1.60 Prestroke mm : (1.45...1.65)

kack travel in mm: 9.00...12.00

: 1-6-5-4-3-2 Firing order

: 0-75-120-195-240-315 Phasing

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 8.20...8.30

Del.quantity cm3/: 7.3...7.4

100 s: (7.1...7.6)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.1...1.7

100 s: (0.8...1.9) cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

Spread

1st speed rpm : 300

: 1.10...1.60 travel mm rpm : 390

2nd speed : 2.20...2.60 travel mm

3rd speed : 1195 rpm : 8.70...9.10 travel mm

: 1245 4th speed man

: 9.40...9.80 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1170

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

ļ

rpm : 1150 Speed

: 73.0...74.0 Del.quantity 1000 : (71.0...76.0)

cm3 : 3.50 Spread

1000 : (6.00)

RATED SPEED

K25

1st version Control lever

position degrees: ?

Testing:

1st rack travel in: 7.20 Speed rpm : 1190...1200

2nd rack travel in: 4.00

rpm : 1230...1260 Speed

4th rack travel in: 1300

rom : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: ?

Testina:

Speed rpm : 200 Minimum rack trave: 8.40 **TOM**

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 300...420

TORQUE CONTROL

Dimension a mm : 0.90

Torque control curve - 1st version

rpm : 1150 1st speed

Rack travel in m: 8.20...8.30

rpm : 800 2nd speed

Rack travel in m: 9.10...9.30

3rd speed rpm : 1000

Rack travel in m: 8.60...8.80

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800

Del.quantity cm3/: 74.5...77.5 1000 s: (72.0...80.0)

rpm : 100 Speed

Del.quantity cm3/: 64.5...69.5 *

1000 s: (62.0...72.0)

RACK STOP ADJUSTMENT

rpm : 500 Speed

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.20

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 120.0...130.0

1000 s: (117.0...133.0)

Speed rpm : 100
Del.quantity cm3/ : 64.5...69.5 * 1000 s: (62.0...72.0)
Rack travel in mm : 10.4...10.6

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

* Set warm-start quantity at excess-fuel stop for starting

on governor housing APPLICATION

Below-ground operation

Note remarks

Test sheet : MB 4,0 j 1 : C3.04.92 Edition : 11.91 Replaces Test oil : ISO-4113

: 0 400 844 096 Combination no.

Injection punp

Pump designation : PES4A95D410RS2809 : 0 410 894 993 EP type number

Governor

: RQV300...1400AB1065-Governor design.

: 0 420 212 227 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M 364 Engine

: 65.0 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

EEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 9.00...12.00 : 1-3-4-2 Firing order

: 0-90-180-270 Phasina

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm : 14001st speed

Rack travel in mm : 9.90...10.00

Del.quantity cm3/: 6.4...6.6

100 s: (6.2...6.8)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 8.5...8.7 Del.quantity cm3/: 0.8...1.2

100 s: (0.5...1.4) cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed -300 rom :

: 0.80...1.30 travel mm 500 man

2nd speed travel mm

: 2.30 ..2.80 : 750 3rd speed rpm : 4.10...4.30 travel mm

: 1500 4th speed rpm

: 8.50...8.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1450 Speed

Rack travel in mm: 15.20...17.80

FULL LOAD DELTY. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 64.5...66.5 Del.quantity 1000 : (62.5...68.5) cm3 : 3.50

Spread

: (6.00) 1000

RATED SPEED

1st version Control lever position degrees: 111...119 Testina: 1st rack travel in: 8.90 Speed rpm : 1450...1460 2nd rack travel in: 4.00 rbm : 1535...1565 Speed 4th rack travel in: 1670 rom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 73...81 Testing: Speed rpm : 100 Minimum rack trave: 9.60 rpm : 300 Rack travel in mm : 8.50...8.70 CONSTANT REGULATION rpm : 550...700 Speed TORQUE CONTROL Dimension a mm : 1.20 Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 9.90...10.00 2nd speed rpm : 400 Rack travel in m: 11.10...11.20 3rd speed rpm : 630 Rack travel in m: 10.90...11.20 : 925 4th speed rpm Rack travel in m: 10.40...10.70 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version rpm : 400 Speed Del.quantity cm3/: 49.0...53.0 1000 s: (46.5...55.5) Speed rpm : 630
Del.quantity cm3/: 49.0..53.0
1000 s: (46.5..55.5)
Speed rpm : 925 Del.quantity cm3/: 59.0...63.0 1000 s: (56.5...65.5)

1mm rack travel less than

full load rack tr: 8.90 Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

:

Pack travel in mm : 14.40...14.80

Remarks:

K28

BREAKAWAY

1st version

Note remarks

: IHC 7,6 y 1 : 13.03.92 Test sheet Edition : 10.91 Replaces : ISO-4113 Test oil

: 0 400 846 580 Combination no.

Injection pump

Pump designation : PES6A95D32ORS2779 : 0 410 896 903 EP type number

Governor

Governor design. : RQV350...1350AB1248-

1R

: 0 420 213 121 Governer no.

Customer-spec. information : NAVISTAR Customer

: DTA 360 Engine

: 138.0 1st version kW : 2700 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 110 assembly

Opening |

: 250...253 pressure, bar

Orifice plate

diameter mm : 0,5

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNI線 OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55

: (2.40...2.60) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 13501st speed

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 8.4...8.6

100 s: (8.2...8.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm: 5.9...6.1

Del.quantity cm3/: 1.7...2.1

100 s: (1.5...2.3)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1350 1st speed

: 7.30...7.50 travel mm

2nd speed : 1460 rpm

: 8.10...8.50 travel mm

: 550 3rd speed rpm

travel mm : 3.10...3.70

350 4th speed rpm

1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1350 Speed

Aneroid pressure h: 900

Del.quantity : 84.0...86.0

1000 : (82.J...88.0)

: 3.50 cm3Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 44...52

Testina:

1st rack travel in: 11.30

Speed rpm : 1390...1420

2nd rack travel in: 4.00

rpm : 1525...1535 Speed

4th rack travel in: 1625

rom : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 11...19

Testina:

Speed : 100 rpm

Minimum rack trave: 9.00 : 350 Speed rom

Rack travel in mm: 5.9...6.10

CONSTANT REGULATION

rpm : 350...500 Speed

Aneroid/Altitude Compensator Test

^ast version

Setting

Speed : 500 rpm

hPa : 900 Pressure

Rack travel mm : 12.30...12.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.20...10.40

2nd pressure hPa : 215

Rack travel in m: 10.80...10.90 3rd pressure hPa : 345

Rack travel in m: 11.60...12.00

START CUT-OUT

1/min: 270 (280) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 75.0...79.0

1000 s: (73.0...81.0)

BREAKAWAY

L02

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 1390...1420 Speed

STARTING FUEL DELIVERY

LOW IDLE

rpm : 350

Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 17.0...21.0 1000 s: (15.0...23.0) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

: NAVISTAR #1818796091

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of

delivery of cylinder 1

Note remarks

Test sheet : DAF 6,2 s Edition : 13.03.92 : 07.91 Replaces Test oil : ISO-4113

: 0 400 846 582 Combination no.

Injection pump

Pump designation : FES6A950320RS2796 EP type number : 0 410 896 901

Governor

Governor design: : RQ300/1300AB1253-1R

: 0 420 201 650 Governer no.

Customer-spec. information : DAF Customer

Engine : NS 156G

1st version kk : 156.0 : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm : (1.95...2.15)

Rack travel in mm : 7.50...10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 8.4...8.5

100 s: (8.2...8.7)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/ : 0.6...1.0

100 s: (0.3...1.2)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 770

Rack travel in mm : 7.50...8.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 1000

Del.quantity : 84.3...87.5)

cm3 : 3.50 Spread

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed Rack travel in mm : 8.0

Testing:

1st rack travel in: 11.60

rpm : 1325...1340 Speed 2nd rack travel in: 4.00

rpm : 1410...1440 Speed

4th rack travel in: 1550

rpm : 0.00...1.09Speed

LOW IDLE 7

Setting point w/out bumper spring

: 300 man Rack travel in mm: 6.5

Testing:

Speed rpm : 100 Minimum rack trave: 7.70 Speed rpm

Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 Speed rpm : 545...585

TORQUE CONTROL

Dimension a mm : 0.60

Torque control curve - 1st version

rpm : 1290 1st speed

Rack travel in m: 12.60...12.70

rpm : 750 2nd speed

Rack travel in m: 14.20...14.80

: 960 3rd speed rpm

Rack travel in m: 13.50...14.10

rpm : 1055 4th speed

Rack travel in m: 12.90...13.30

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rpm Pressure hPa : 1000

Rack travel mm : 12.80...12.90

Measurement

 $1/\min : 600$ Speed

1st pressure hPa : -

Rack travel in m: 10.80...11.00

2nd pressure hPa : 260

Rack travel in m: 12.30...12.40

3rd pressure hPa : 210

Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

rpm : 1290 Speed

Del.quantity cm3/: 87.0...89.0 1000 s: (84.5...91.5)

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 44.5...45.5

1000 s: (42.5...47.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1325...1340

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 6.0...10.0

1000 s: (3.5...12.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

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Note remarks

: MB 6,0 j 4 : 03.04.92 Test sheet Edition Replaces : 03.91 Test oil : ISO-4113

Combination no. : 0 400 846 591

Injection pump

Pumo designation : PES6A95D41ORS2797 EP type number : 0 410 896 900

Governor

: RQV300...1400AB1065-Governor design.

22L

: 0 420 212 226 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M 366 Engine

1st version kW : 97.0 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening .

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

: 1-5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 10.10...10.20

Del.quantity cm3/: 6.1...6.3

100 s: (5.9...6.5)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 8.9...9.1 Del.quantity cm3/: 0.8...1.2

100 s: (0.5...1.4)

cm3 : 0.3 100 s: (0.5) Spread

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed 300 nom

0.80...1.30 travel mm rpm : 500 2nd speed

2.30...2.80 travel mm

: 750 3rd speed rpm : 4.10...4.30

travel mm : 1500 4th speed rpm

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 61.0...63.0 Del.quantity 1000 : (59.0...65.0)

: 3.50 Spread cm3 : (6.00) 1000

RATED SPEED

1st version Control lever

position degrees: 109...117

Testina:

1st rack travel in: 9.10

rpm : 1450...1460 Speed

2nd rack travel in: 4.00 Speed rpm : 1540...1570 4th rack travel in: 1670

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 72...80

Testing:

Speed rpm : 100 Minimum rack trave: 10.50 Speed rpm : 300

Rack travel in mm : 8.90...9.10

CONSTANT REGULATION

rpm : 500...650 Speed

TORQUE CONTROL

Dimension a mm : 1.20

Torque control curve - 1st version

1st speed rpm : 1400

Rack travel in m: 10.10...10.20

2nd speed rpm : 400

Rack travel in m: 11.30...11.60

3rd speed rpm : 630

Rack travel in m: 10.90...11.20

4th speed rpm : 925

Rack travel in m: 10.40...10.70

START CUT-OUT

1/min: 240 (260) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 400 Del.quantity cm3/: 49.0...52.0 1000 s: (46.5...54.5)

rpm : 630 Speed

Del.quantity cm3/: 49.0...53.0

1000 s: (46.5...55.5)

rpm : 925 Speed

Del.quantity cm3/: 57.0...61.0 1000 s: (54.5...63.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.10

rpm : 1450...1460 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

Rack travel in mm : 14.60...15.00

Remarks:

Set shutoff stop to contact at 3.0...3.5 mm control-rod travel. BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Note remarks Test sheet : FIA 5,9 e : 20.03.92 : 0-60-120-180-240-300 Edition Phasing : 11.91 Replaces : ISO-4113 Tolerance + - ° : 0.50 (0.75) Test oil : 0 400 846 597 Combination no. Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PES6A900410RS2813 EP type number : 0 410 896 039 1st speed nom: 1250 Governor Rack travel in mm : 11.70...11.80 Governor design. : RQV300...1250AB1264-: 0 420 212 233 Del.quantity cm3/: 7.9...8.0 Governer no. 100 s: (7.7...8.2) Customer—spec. information Customer : IVECO-FIAT cm3 : 0.3Spread : 8065,25,000 Engine 100 s: (0.5) : 145.0 1st version kW : 2500 rpm : 325.0 2nd speed Rated speed Rack travel in mm: 8.6...8.8 Del.quantity cm3/ : 1.3...1.7 TEST BENCH REQUIREMENTS 100 s: (1.1...1.9) cm3 : 0.2Test oil Spread 100 s: (0.4) inlet temp. °C : 38...42 Overflow valve (B) Setting of injection pump : 1 419 992 198 with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL rpm : 300 1st speed Test nozzle holder travel mm : 0.60...1.10 : 0 681 343 009 2nd speed : 445 assembly rpm 2.20...2.70 travel mm 3rd speed 540 Opening man : 2.80...3.30 : 172...175 pressure, bar travel mm : 897 4th speed rpm : 5.00...5.50 travel mm Test lines : 1 680 750 014 : 1324 5th speed rpm : 8.00...8.50 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00x2.00x600 Control-lever position Degree: -1 rpm : 1455 (A) Injection pump setting values Speed Rack travel in mm; 9.60...12.20 Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values _ BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 Speed rpm : 1250 Aneroid pressure h: 700 Del.quantity : 79.0...80.0 Del.quantity : /y.u...82.0) : 2.75...2.85 : (2.70...2.90) Prestroke mm

cm3 : 3.00 1000 : (5.00) Spread

RATED SPEED

1st version Control lever

position degrees: 101...109

Testing:

1st rack travel in: 10.70

rpm : 1310...1320 Speed

2nd rack travel in: 4.00

Speed rpm : 1415...1445 4th rack travel in: 1510

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 75...83

Testing:

rom : 225 Speed Minimum rack trave: 12.10 rpia : 325

Rack travel in mm : 8.60...8.80

CONSTANT REGULATION

rpm : 350...450 Speed

TORQUE CONTROL

Dimension a mm : 1.60

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 11.70...11.80

2nd speed rpm : 400

Rack travel in m: 13.30...13.40

3rd speed rpm : 700

Rack travel in m: 12.60...12.80

4th speed rpm : 915
Rack travel in m: 12.10...12.40

Aneroid/Altitude

Compensator Test

1st version

Setting

pm : 400 hPa : 700 Speed rom Pressure

: 12.90...13.00 Rack travel mm

Measurement

1/min: 400 Speed

1st pressure hPa : -

Rack travel in m: 11.00...11.10
2nd pressure hPa : 315
Rack travel in m: 11.60...11.70
3rd pressure hPa : 280

Rack travel in m: 12.20...12.40

START CUT-OUT

1/min: 220 (250) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 700

Del.quantity cm3/: 81.0...83.0 1000 s: (78.5...85.5)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 51.0...52.0 1000 s: (49.0...54.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

rpm : 1310...1320 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0 1000 s: (97.0...113.0)

Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : IHC 7,6 z 1 Edition : 13.03.92 : 11.91 Replaces : ISO-4113 Test oil

Combination no. : 0 400 846 603

Injection pump

Pump designation : PES6A95D32DRS2779 EP type number : 0 410 896 903

Governor

: RQV350...1350AB1251-Governor design.

: 0 420 213 125 Governer no.

Customer-spec. information Customer : NAVISTAR

: DT 360 Engine

: 142.0 1st version kW Rated speed : 2700

TEST BENCH REQUIREMENTS

Test cil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 110 assembly

Opening.

: 250...253 pressure, bar

Orifice plate

diameter mm : 0,5

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.45...2.55 Prestroke mm

: (2.40...2.60) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1350 1st speed

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 8.4...8.6

100 s: (8.2...8.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1350 1st speed

: 7.30...7.50 travel mm

rpm : 14602nd speed

travel mm : 8.10...8.50

: 550 3rd speed rpm

: 3.10...3.70 travel mm

350 4th speed rpm

: 1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1350 Speed Aneroid pressure h: 900

: 84.0...86.0 Del.quantity

1000 : (82.0...88.0) : 3.50

Spread cm3 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 44...52

Testina:

1st rack travel in: 11.30 Speed rpm : 1390...1420

2nd rack travel in: 4.00 rpm : 1525...1535 Speed

4th rack travel in: 1625

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 10...18

Testing:

Speed rpm : 100 Minimum rack trave: 9.00 Speed rom

Rack travel in mm : 5.80...6.00

CONSTANT REGULATION

: 350...500 Speed rpm

TORQUE CONTROL

Dimension a mm : 0.80

Torque control curve - 1st version

rpm : 1350 1st speed

Rack travel in m: 12.30...12.40 od speed rpm : 850 Rack travel in m: 13.10...13.20

2nd speed

3rd speed rpm : 1200

Rack travel in m: 12.70...12.90

Ameroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm hPa : 900 Pressure

: 13.10...13.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.10...9.30

2nd pressure hPa : 265

Rack travel in m: 10.30...10.40

3rd pressure hPa : 560

Rack travel in m: 12.10...12.50

START CUT-OUT

1/min: 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

: 850 Speed LIDU

Del.quantity cm3/: 96.0...100.0 1000 s: (94.0...102.0)

cm3 : 5.00Spread 1000 s: (7.C0)

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 60.5...64.5

1000 s: (58.5...66.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 1390...1420 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm: 5.80...6.00 Del.quantity cm3/: 17.0...21.0 1000 s: (14.5...23.5) Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

: NAVISTAR #1818798C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of

delivery of cylinder 1

Note remarks

: IHC 7,6 y 2 Test sheet : 13.03.92 Edition : 11.91 Replaces Test oil : ISO-4113

: 0 400 846 604 Combination no.

Injection pump

Pump designation : PES6A95D32ORS2779

: 0 410 896 903 EP type number

Governor

Governor design. : RQV350...1350AB1248-

: 0 420 213 126 Governer no.

Customer-spec. information Customer : NAVISTAR

: DT 360 Engine

: 127.0 1st version kW Rated speed : 2700

TEST BENCH REQUIREMENTS

Test pil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 110 assembly

Opening.

: 250...253 pressure, bar

Orifice plate

diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.45...2.55 : (2.40...2.60) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1350

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 7.9...8.1

100 s: (7.7...8.3)

 $c_03 : 0.3$ Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1350 1st speed

: 7.30...7.50 travel ma

rpm : 1460 2nd speed

: 8.10...8.50 travel mm

: 550 3rd speed rpm

: 3.10...3.70 travel mm

: 350 4th speed rpm

1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1350 Speed

Aneroid pressure h: 900

: 79.5...81.5 Del.quantity 1000 : (77.5...83.5)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 10.90

Speed rpm : 1390...1420

2nd rack travel in: 4.00

Speed rpm : 1525...1535 4th rack travel in: 1625

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 11...19

Testing:

: 100 Speed rom

Minimum rack trave: 9.00

Speed COM Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed : 350...500 man

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm

Pressure hPa : 900

Rack travel mm : 11.90...12.00

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 110 Rack travel in m: 10.40...10.50

3rd pressure hPa : 300

Rack travel in m: 11.50...11.90

START CUT-OUT

1/min: 270 (280) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 71.0...75.0 1000 s: (69.0...77.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

Speed rpm : 1390...1420

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0

1000 s: (130.0...160.0)

Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.5...23.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

: NAVISTAR #1819273091

Limit shutoff stop screw to 1.0 mm.

Start-of-decivery mark is at start of

delivery of cylinder 1

Note remarks

Test sheet

: IHC

Edition

: 13.03.92

Replaces

Test oil

: ISO-4113

Combination no.

: 0 400 846 606

Injection pump

Pump designation : PES6A950320RS2779

EP type number

: 0 410 896 903

Governor

Governor design.

: RQV350...1200AB1236-

Governer no.

: 0 420 213 127

Customer-spec. information Customer

Engine

: NAVISTAR

: DT 466

1st version kW

: 145.0

Rated speed

: 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

assembly

: 1 688 901 110

Opening

pressure, bar

: 250...253

Orifice plate

diameter mm : 0.5

Test lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.65...2.75

: (2.60...2.80)

Rack travel in mm: 10.50

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1200

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 9.9...10.1

100 s: (9.7...10.3)

Spread

cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.7...2.1

100 s: (1.5...2.3)

Spread

cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 1400 : 8.60...9.00 travel mm

2nd speed

rpm : 1250

travel mm

: 7.30...7.50

3rd speed

rpm : 550

travel mm

: 3.10...3.70

4th speed

: 350

travel mm

: 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Del.quantity

Speed

Spread

rpm : 1200

rpm

Aneroid pressure h: 900

: 99.0...101.0

cm3

1000 : (97.0...103.0)

: 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 12.30

rpm : 1230...1260 Speed

2nd rack travel in: 4.00

rpm : 1375 ... 1385 Sneed

4th rack travel in: 1500

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 11...19

Testing:

Speed rpm : 100

Minimum rack trave: 9.00

Speed T)On

Rack travel in mm: 5.90...6.10

CONSTANT REGULATION

rom : 350...500 Speed

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 500 rpm

hPa : 900 Pressure

: 13.30...13.40 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 225

Rack travel in m: 10.90...11.00

3rd pressure hPa : 460

Rack travel in m: 12.10...12.50

START CUT-OUT

1/min: 270 (280) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 74.5...78.5 1000 s: (72.5...80.5)

BREAKAWAY

L14

1st version

1mm rack travel less than

full load rack tr: 12.30

rpm : 1230...1260 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...170.0 1000 s: (125.0...175.0)

Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/: 17.0...21.0
1000 s: (15.0...23.0)
Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

: NAVISTAR #1819325091

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of

delivery of cylinder 1

Note remarks

Test sheet

: DAF : 13.03.92

Edition

Replaces Test oil

: ISO-4113

Combination no.

: 0 400 846 608

Injection pump

Pump designation : PES6A95D32ORS2796

EP type number : 0 410 896 901

Governor

Governor design. : RQ300/1300AB1253-3R

: 0 420 201 654 Governer no.

Customer-spec, information

: DAF Customer

Engine : NS 156G

1st version kW : 156.0 : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 089

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.15) Rack travel in mm : 7.50...10.50

: 0.50 (0.75)

: 1-5-3-6-2-4

: 0-60-120-180-240-300

Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

Firing order

Phasing

1st speed rpm: 850

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 8.4...8.5

100 s: (8.2...8.7)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.4...6.6

Del.quantity cm3/: 0.6...1.0

100 s: (0.3...1.2) cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 770

Rack travel in mm : 7.50...8.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

Aneroid pressure h: 1000

Del.quantity : 84.5...85.5 1000 : (82.5...87.5)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 770 Rack travel in mm: 8.0

Testing:

1st rack travel in: 11.60

rpm : 1325...1340 Speed

2nd rack travel in: 4.00

rpm : 1410...1440 Speed

4th rack travel in: 1550 rom : 0.00...1.00 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 6.5 Testing: Speed rpm : 100 Minimum rack trave: 7.70 : 300 Speed man Rack travel in mm: 6.40...6.60 Rack travel in mm : 2.00 rom : 525...565 Speed TORQUE CONTROL Dimension a mm : 0.60 Torque control curve - 1st version nom : 1290 1st speed Rack travel in m: 12.60...12.70 rpm : 750 2nd speed Rack travel in m: 14.20...14.80 3rd speed rpm : 960 Rack travel in m: 13.50...14.10 4th speed rpm : 1055 Rack travel in m: 12.90...13.30 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm. hPa : 1000 Pressure : 12.80...12.90 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.90...11.10 2nd pressure hPa : 250

Rack travel in m: 12.30...12.40 3rd pressure hPa : 90 Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1000 rpm : 1290 Speed Del.quantity cm3/: 87.0...89.0 1000 s: (84.5...91.5) Aneroid pressure h: rpm : 600 Speed Del.quantity cm3/: 45.5...46.5 1000 s: (43.5...48.5) **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 11.60 rpm : 1325...1340 Speed

LOW IDLE

: 300 Speed rpm Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 6.0...10.0 1000 s: (3.5...12.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

APPLICATION

Omnibus

Note remarks

: MWN 4,1 b 5 Test sheet Edition : 20.03.92 Replaces : 02.91

Test oil : ISO-4113

Combination no. : 0 400 864 084

Injection pump

Pump designation : PES4A90D320/3RS2659

EP type number : 0 410 894 028

Governor

Governor design. : RSV325...1250AUC2182

-8R

: 0 420 233 277 Governer no.

Customer-spec, information Customer : MWN

: D226B-4 Engine

: 74.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm

(2.90...3.10)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

Firing order

: 0-90-180-270 Phasing

Tolerance $+ - \circ : 0.50 (0.75)$

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00

& maximum rack tra: 21.00 Difference CS: 3.50...4.50

BASIC SETTING

rpm: 1175 1st speed

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 8.0...8.2

100 s: (7.8...8.4)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350.0 Rack travel in mm : 7.2...7.4 Del.quantity cm3/ : 1.2...1.6 100 s: (1.0...1.8)

cm3 : 0.2 Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175 Aneroid pressure h: 700

Del.quantity : 80.5...82.5 1000 : (78.5...84.5) Spread cm3 : 3.00 1000 : (5.00)

RATED SPEED

1st version Control lever

position degrees: 85...93

Testing: 1st rack travel in: 9.80 rpm : 1215...1225 Speed 2nd rack travel in: 4.00 : 1220...1250 Speed morn . 3rd rack travel in: 4.00 rpm : 1245...1275 Speed 4th rack travel in: 1350 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 58...66 Setting point w/out bumper spring man Rack travel in mm: 6.8 Testing: Speed rpm Minimum rack trave: 19.50 Lbw : 350 Speed Rack travel in mm : 6.70...6.90 Rack travel in mm : 2.00 nom : 510...570 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1175 Rack travel in m: 10.80...10.90 2nd speed rpm : 800 Rack travel in m: 12.30...12.40 : 1000 4th speed rom Rack travel in m: 11.50...11.70 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed npm hPa : 700 Pressure : 12.30...12.40 Rack travel mm Measurement Speed $1/\min : 500$ 1st pressure hPa : -Rack travel in m: 10.90...11.00 2nd pressure hPa : 215 Rack travel in m: 11.50...11.60 3rd pressure hPa : 300 Rack travel in m: 11.80...12.00 FUEL DELIVERY CHARACTERISTICS 1st version

: 800 rpm Del.quantity cm3/: 94.0...96.0 1000 s: (91.5...98.5) Aneroid pressure h: 215 : 500 Speed rom Del.quantity cm3/: 78.0...80.0 1000 s: (75.5...82.5) Aneroid pressure h: : 500 Speed rpm Del.quaritity 2m3/: 68.0...69.0 1000 s: (66.0...71.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.80 rpm : 1215...1225 Speed STARTING FUEL DELIVERY Speed rpm Del.quantity cm3/: 130.0...140.0 1000 s: (127.0...143.0) Rack travel in mm : 19.50...21.00 LOW IDLE Speed rpm : 350 Rack travel in mm : 7.20...7.40 Del.quantity cm3/: 12.0...16.0 1000 s: (10.0...18.0) cm3 : 2.50 Spread 1000 s: (4.50) Remarks: : FENDT **APPLICATION** Tractor (tractor engines)

Aneroid pressure h: 700

Note remarks

: CUM 8,3 a69 Test sheet : 13.03.92 Edition Replaces : 09.89 : ISO-4113 Test oil

: 0 400 866 146 Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

: 9 410 230 025 EP type number

Governor

: RSV400...1100AUC2190 Governor design.

-36R

: 0 420 233 243 Governer no.

Customer-spec. information Customer : C.D.C.

: 6 CT 8.3 Engine

: 138.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.40...11.50

Del.guantity cm3/: 10.7...10.9

100 s: (10.5...11.1)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 750.0 2nd speed

Rack travel in mm : 12.6...12.8 Del.quantity cm3/ : 12.5...12.9 100 s: (12.3...13.1)

cm3 : 0.6Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

107.5...109.5 1000 : (105.5...111.5) Del.quantity

cm3 : 4.00Spread

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 10.40 rpm : 1140...1150 Speed 2nd rack travel in: 4.00

: 1225...1235 Speed חכרו 3rd rack travel in: 4.00

: 1215...1245 Speed CON

4th rack travel in: 1300 Speed : 0.30...1.40 COM

LOW IDLE 1 Control Lever

position degrees: 27...35 Setting point w/out bumper spring

: 400 rpm Rack travel in mm: 5.3

Testina:

Speed rpm : 100 Minimum rack trave: 19.00 : 400 Speed וווסרו

Rack trave! in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.40...11.50

2nd speed rpm : 750

Rack travel in m: 12.60...12.80

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.40

Speed rom : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Dei.quantity cm3/: 135.0...155.0

1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400 Rack travel in mm : 5.70...5.90 Del.quantity cm3/: 14.5...18.5 1000 s: (12.0...21.0)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: C.D.C. # 3915952

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet : CLM 8,3 L 8 : 13.03.92 Edition : 07.91 Replaces

: ISO-4113 Test oil

Combination no. : 0 400 866 150

Injection pump

Pump designation: PES6A100D320/3RS2763

EP type number : 0 410 806 006

Governor

: RSV400...1100A0c2190 Covernor design.

-45R

: 0 420 233 253 Governer no.

Customer-spec. information Customer : C.D.C.

: 6CT 8.3 Engine

1st version kW : 134.0 : 2200 Rated Deed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm : 11001st speed

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 10.6...10.8

100 s: (10.4...11.0)

cm3 : 0.4Spread

100 s: (0.6)

2nd speed rpm : 375.0 Rack travel in mm : 5.9...6.1

Del.quantity cm3/: 2.1...2.5 **100** s: (1.8...2.7)

cm3 : 0.6

Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

106.5...108.5 1000 : (104.5...110.5) Del.quantity

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 51...59

Testing:

1st rack travel in: 9.90

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1230...1240 Speed

3rd rack travel in: 4.00

rpm : 1230...1260 Speed

4th rack travel in: 1300 Speed rpm: 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 31...39

Setting point w/out bumper spring

Speed rpm : 375 Rack travel in mm : 5.5

Testing:

Speed : 100 rpm Minimum rack trave: 19.00 rpm : 375 Speed

Rack travel in mm : 5.90...6.10

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.90...11.00 ad speed rpm : 750

2nd speed

Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750 Del.quantity cm3/ : 119.5...123.5

1000 s: (117.5...125.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 150.0...170.0 1000 s: (145.0...175.0) Rack travel in mm: 19.00...21.00

LOW IDLE

Speed rpm : 375
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 21.0...25.0
1000 s: (18.5...27.5)

cm3 : 6.00Spread

1000 s: (8.00)

Remarks:

: C.D.C. # 3915974

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet : 03.04.92 Edition Replaces : 02.92 Test oil : ISO-4113

Combination no. : 0 400 866 175

Injection pump

Pump designation : PES6A90D320/3RS2660

EP type number

: 0 410 896 078

Governor

Governor design. : RSV325...1175A0C2247

-2R

: 0 420 233 290 Governer no.

Customer-spec. information Customer : MWM

: TD226-B6 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm

: (2.90...3.10) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : -1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference * CS : 3.50...4.50

BASIC SETTING

1st speed rpm: 1175

Rack travel in mm : 11.10...11.20

Del.guantity cm3/: 8.3...8.4

100 s: (8.1...8.6)

cm3 : 0.3Spread

100 s: (0.5)

rpm : 350.02nd speed Rack travel in mm: 6.8...7.0 Del.quantity cm3/: 1.0...1.6

100 s: (0.8...1.8)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175 Aneroid pressure h: 700

: 83.0...84.0 Del.quantity

1000 : (81.0...86.0)

cm3 : 3.00 Spread 1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 94...102

Testing: 1st rack travel in: 10.10 rpm : 1215...1225 Speed 2nd rack travel in: 4.00 : 1270...1300 Speed rpm 3rd rack travel in: 4.00 Speed rpm : 1295...1325 4th rack travel in: 1430 rpm : 0.30...1.40Speed LOW! IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring rpm : 350 Speed Rack travel in mm: 6.4 Testing: Speed : 100 **m**cr Minimum rack trave: 19.50 : 350 rpm Rack travel in mm: 6.80...7.00 Rack travel in mm: 2.00 rpm : 530...590 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1175 1st speed Rack travel in m: 11.10...11.20 rpm : 500 2nd speed Rack travel in m: 11.80...11.90 3rd speed rpm : 800 Rack travel in m: 11.70...11.90 4th speed rpm : 960 Rack travel in m: 11.40...11.60 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 700 : 11.80...11.90 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 10.90...11.00 2nd pressure hPa : 320 Rack travel in m: 11.60...11.70 3rd pressure hPa : 255 Rack travel in m: 11.20...11.40 FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 700
Speed rpm : 500
Del.quantity cm3/: 80.5...82.5
1000 s: (78.0...85.0)
Aneroid pressure h: 700
Speed rpm : 800
Del.quantity cm3/: 85.0...88.0
1000 s: (82.5...90.5)
Aneroid pressure h: Speed rpm : 500
Del.quantity cm3/: 66.0...67.0
1000 s: (64.0...69.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10 Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...140.0 1000 s: (127.0...143.0) Rack travel in mm : 19.50...21.00

Remarks:

: RENAULT

APPLICATION

Tractor (tractor engines)

Note remarks

Test sheet

Edition

: 03.04.92

Replaces

Test oil

: ISO-4113

Combination no.

: 0 400 874 252

Injection pump

Pump designation : PES4A95D41ORS2809-1

EP type number

: 0 410 894 992

Governor

Governor design.

: RSV350...1400A0C2006

Governer no.

: 0 420 232 575

Customer-spec. information

Customer

: MERCEDES-BENZ

Engine

: 0M364

1st version kW

: 65.0

Rated speed

: 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening

pressure, bar

: 172...175

Test lines

: 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.20...3.30 : (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasing

: 0-90-180-270

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 1380

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 6.4...6.6

100 s: (6.2...6.8)

Spread

cm3 : 0.3

100 s: (0.6)

2nd speed

rpm : 350.0

Rack travel in mm: 8.0...8.4 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

Spread

cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed

rpm : 1380

: 64.5...66.5 Del.quantity

cm3

1000 : (62.5...68.5)

Spread

: 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 109...117

Testing:

1st rack travel in: 9.40

rpm : 1433...1438 Speed

2nd rack travel in: 4.00

rpm : 1491...1508 Speed 4th rack travel in: 1575

rpm : 0.30...1.70

LOW IDLE 1

Speed

Control Lever position degrees: 74...82 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 8.2 Testina: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 350
Rack travel in mm : 8.00...8.40
Rack travel in mm : 2.00 Speed rpm : 490...550 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version rpm : 1380 1st speed Rack travel in m: 10.40...10.50 npm : 400 2nd speed Rack travel in m: 11.70...11.80 3rd speed rpm : 900 Rack travel in m: 11.10...11.30 FUEL DELIVERY CHARACTERISTICS 1st version : 400 Speed nom Del.quantity cm3/: 48.0...51.0 1000 s: (45.5...53.5) Spread cm3 : -1000 s: (5.00)

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 16.30...16.70

LOW IDLE

Spread

Remarks:

Speed rpm : 350 Rack travel in mm : 8.00...8.40

Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5)

: 3.50 cm3

1000 s: (5.50)

L26

Note remarks

: DEE 7,7 d 8 : 13.03.92 : 09.91 Test sheet Edition Replaces : ISO-4113 Test oil

Combination no. : 0 400 876 381

Injection pump

Pump designation : PES6A1000410RS2762-1 : 0 410 806 008

EP type number

Governor

: RSV425...1050A0C2252 Governor design.

-1L

: 0 420 232 571 Governer no.

Customer spec. information : JOHN DEERE Customer

: 6076TRW-30 Engine

: 131.5 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 27...29

: 2.95...3.05 Prestroke mm : (2.90...3.10)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rom: 1050 1st speed

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 10.9...11.1

100 s: (10.7...11.3)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 425.02nd speed Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 2.1...2.5

100 s: (1.9...2.7)

cm3 : 0.6Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 109.0...111.0 Del.quantity

1000 : (107.0...113.0)

: 4.00 cm3 Spread 1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 10.30

rpm : 1095...1105 Speed

2nd rack travel in: 4.00

Speed rpm: 1165...1175 3rd rack travel in: 4.00

Speed rpm: 1155...1185 4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 20...28 Setting point w/out bumper spring

rpm : 425 Rack travel in mm: 4.9

Testing:

rpm : 100 Speed Minimum rack trave: 19.00

rpm : 425 Speed

Rack travel in mm : 5.30...5.50

TURQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 11.30...11.40 2nd speed rpm : 750

Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed MOCT

Del.quantity cm3/: 134.5...138.5 1000 s: (132.5...140.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30

Speed rpm : 1095...1105

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 100.0...120.0 1900 s: (95.0...125.0)

LOW IDLE

rpm : 425

Rack travel in mm: 5.30...5.50 Del.quantity cm3/: 21.5...25.5 1000 s: (19.5...27.5)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE41833

Start-of-delivery mark = 13,5° after

start of delivery cyl. 1.

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

Starting/full-load transition speed

from holding magnet = 500 1/min.

APPLICATION

Tractor (tractor engines)

Note remarks

: DEE 7,7 d 6 : 13.03.92 Test sheet Edition Replaces : 06.91

Test oil : ISO-4113

Combination no. : 0 400 876 383

Injection pump

Pump designation : PES6A100D410RS2762-1

EP type number : 0 410 806 008

Governor

Governor design. : RSV400...1100A2C2204

-8L

: 0 420 232 551 Governer no.

Customer spec. information : JOHN DEERE Customer

: 6076TDW02 Engine

: 128.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 D10

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 190...200

Test nozzle holder

: 1 688 901 101 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05 : (2.90...3.10) Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 11001st speed

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 10.0...10.2

100 s: (9.8...10.4)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 400.02nd speed Rack travel in mm : 5.9...6.1 Del.quantity cm3/: 2.9...3.3 100 s: (2.7...3.5)

cm3 : 0.6Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 100.5...102.5 Del.quantity 1000 : (98.5...104.5)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

MO1

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 9.70

rpm : 1150...1160 Speed

2nd rack travel in: 4.00

: 1195...1205 Speed non

3rd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 15...23

Setting paint w/out bumper spring

mom : 400

Rack travel in mm: 5.5

Testina:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 400

Rack travel in mm : 5.40...5.60

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100 Rack travel in m: 10.70...10.80

2nd speed rpm : 650

Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650 Del.quantity cm3/: 134.0...138.0 1000 s: (132.0...140.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70 rpm : 1150...1160 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 100.0...120.0 1000 s: (95.0...125.0)

LOW IDLE

rpm : 400 Speed

MO2

Rack travel in mm: 5.90...6.10 Del.quantity cm3/: 29.0...33.0 1000 s: (27.0...35.0)

cm3 : 6.00 Spread

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47356

Start-of-delivery mark = 13,5° after

start of delivery cyl. 1.

Starting/full-load transition speed from holding magnet = 450 1/min.

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

Note remarks

Test sheet Edition

: DEE 7,7 d 7

: 13.03.92

Replaces Test oil

: 02.92 : ISO-4113

Combination no. : 0 400 876 391

Injection pump

Pump designation : PES6A1000410RS2762-1

EP type number

: 0 410 806 008

Governor

Governor design.

: RSV425...1100A2C2225

-5L

Governer no.

: 0 420 232 566

Customer

Customer-spec. information

: JOHN DEERE

Engine

: 6076ARW-09

1st version kW

: 145.0

Rated speed

: 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar

Orifice plate

: 207...210

diameter mm

: 0,6

Test lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05 : (2.90...3.10)

Rack travel in mm : 10.50 _____

Firing order

: 1-5- 3- 6- 2- 4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1100

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 11.4...11.6

100 s: (11.2...11.8)

Spread

Spread

cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 425.0 Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 2.6...3.0 100 s: (2.4...3.2)

cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1100

Aneroid pressure h: 900

Del.quantity

: 114.0...116.0 1000 : (112.0...118.0)

Spread

cm3 : 4.00 1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 39...47

MO3

Testing:

1st rack travel in: 10.90

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1205...1215 Speed

3rd rack travel in: 4.00

Speed rpm : 1195...1225

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control Lever

position degrees: 15...23

Setting point wout bumper spring

rpm : 425

Rack travel in mm: 5.3

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

: 425 rpm

Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.90...12.00

2nd speed rpm : 750

Rack travel in m: 13.90...14.10

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm

hPa : 900 Pressure

: 13.90...14.10 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.70...11.90

2nd pressure hPa : 535 Rack travel in m: 12.30...12.40 3rd pressure hPa : 720

Rack travel in m: 13.40...13.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm: 750
Del.quantity cm3/: 143.5...147.5
1000 s: (141.5...149.5)

Aneroid pressure h: -

: 500 Speed rpm

1000 s: (127.0...135.0)

Del.quantity cm3/: 129.0...133.0

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 100.0...120.0 1000 s: (95.0...125.0)

LOW IDLE

Speed rpm: 425
Rack travel in mm: 5.70...5.90
Del.quantity cm3/: 26.0...30.0

1000 s: (24.0...32.0)

Spread cm3 : 6.00

1000 s: (8,00)

Remarks:

: JOHN DEERE # RE47502

Start-of-delivery mark = 13,5° after

start of delivery cyl. 1.

The stop position of the control rod must be easily reached with the stop

lever

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : AIF Test sheet Edition : 20.03.92 : 01.92 Replaces : ISO-4113 Test oil Combination no. : 0 400 876 393 Injection pump Pump designation : PES6A90D410RS2723 : 0 410 896 085 EP type number Governor : RSV300...1350A0C2257 Governor design. : 0 420 232 568 Governer no. Customer—spec. information Customer : IVECO-AIFO Engine : 8061.SRM 25 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly **Opening** pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27 : 2.20...2.30 Prestroke mm : (2.15...2.35) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing Tolerance $+ - ^{\circ} : 0.50 (0.75)$ Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1350 Rack travel in mm : 13.60...13.70 Del.guantity cm3/: 10.9...11.0 100 s: (10.7...11.2) Spread cm3 : 0.3100 s: (0.4) 2nd speed rpm : 300.0 Rack travel in mm : 9.0...9.2 Del.quantity cm3/ : 2.3...2.7 100 s: (2.1...2.9) cm3 : 0.2Spread 100 s: (0.4) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 4.50 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1350 : 109.0...110.0 Del.quantity 1000 : (107.0...112.0) : 3.00 Spread cm3 1000 : (4.50) RATED SPEED 1st version Control lever position degrees: 100...108 Testing: 1st rack travel in: 12.70 rpm : 1390...1400 Speed 2nd rack travel in: 4.00 rpm : 1595...1625 Speed 4th rack travel in: 1700

rpm : 0.30...1.40

Speed

LOW IDLE 1

Control Lever

position degrees: 74...82

Setting point w/out bumper spring

Speed : 300 rpm

Rack travel in mm: 5.5
Speed rpm: 300
Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00 Speed rpm : 525...585

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1350

Rack travel in m: 13.60...13.70

2nd speed rpm : 500
Rack travel in m: 13.60...13.80
5th speed rpm : 350
Rack travel in m: 15.10...15.30

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 500 Speed

Del.quantity cm3/: 98.0...100.0 1000 s: (95.5...102.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.70

rpm : 1390...1400 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0)

Rack travel in mm : 17.20...17.60

Remarks:

Test electrically-released starting quantity (EES) with 12 volts

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : DEE 7,6 w 6 Edition : 13.03.92 : 11.91

Replaces : ISO-4113 Test oil

: 0 400 876 394 Combination no.

Injection pump

Pump designation : PES6A1000410RS2754

EP type number : 0 410 806 002

Governor

Governor design. : RSV425...1100A0c2234

-2L

Governer no. : 0 420 232 569

Customer-spec. information Customer : JOHN DEERE

: 6076TRW04 Engine

1st version kW : 122.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05 : (2.90...3.10) Rack travel in mm : 10.50

: 1-5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rom : 11001st speed

Rack travel in mm : 10.60...10.70

Del.guantity cm3/: 10.0...10.2

100 s: (9.8...10.4)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 425.0 2nd speed Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 2.6...3.0

100 s: (2.4...3.2)

cm3 : 0.6Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 100.5...102.5 Del.quantity 1000 : (98.5...104.5)

cm3 : 4.00 Spread

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testina:

1st rack travel in: 9.60

rpm : 1145...1155 Speed

2nd rack travel in: 4.00

rpm : 1200...1210 Speed

3rd rack travel in: 4.00

Speed rpm : 1190...1220 4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1 Control Lever

position degrees: 17...25

Setting point w/out bumper spring

rpa : 425 Rack travel in mm: 5.1

Testing:

rpm : 100 Speed Minimum rack trave: 19.00

rpm : 425

Rack travel in mm : 5.50...5.70

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100
Rack travel in m: 10.60...10.70
2nd speed rpm : 700

Rack travel in m: 11.80...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 700 mcgri

Del.quantity cm3/: 125.0...128.0 (1000 s: (122.5...130.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.60

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 100.0...120.0 1000 s: (95.0...125.0)

LOW IDLE

rpm : 425 Speed

Rack travel in mm : 5.50...5.70 Del.quantity cm3/ : 26.0...30.0

1000 s: (24.0...32.0)

cm3 : 6.00 Spread 1000 s: (8.00)

Remarks:

: JOHN DEERE # RE51026

Start-of-delivery mark = 13,5° after

start of delivery cyl. 1.

Starting/full-load transition speed from holding magnet = 500 1/min.

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet : DEE

Edition : 13.03.92

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 876 395

Injection pump

Pump designation : PES6A100D410RS2676

: 9 410 230 023 EP type number

Governor

: RSV425...1100A2C2161 Governor design.

-1L

: 9 420 234 133 Governer no.

Customer-spec. information

: JOHN DEERE Customer

Engine : 6466T

: 120.0 1st version kW

: 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test Lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55 : (2.40...2.60)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 11001st speed

Rack travel in mm : 9.40...9.50

Del.guantity cm3/: 9.8...10.0

100 s: (9.6...10.2)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 425.0 2nd speed

Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 2.0...2.4

100 s: (1.8...2.6)

cm3 : 0.6Spread

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Aneroid pressure h: 700

: 98.5...100.5 Del.quantity 1000 : (96.5...102.5)

: 4.00 cm3

Spread

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 8.40

rpm : 1145...1155 Speed

2nd rack travel in: 4.00

rpm : 1205...1215 Speed

3rd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 24...32

Setting point w/out bumper spring

rom : 425 Rack travel in mm: 4.9

Testing:

Speed : 100 rpm

Minimum rack trave: 19.00

Speed rpm : 425 Rack travel in mm : 5.30...5.50

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 9.40...9.40

2nd speed rpm : 750

Rack travel in m: 10.60...10.80

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rom hPa : 700 Pressure

Rack travel mm : 10.60...10.80

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 9.10...9.30

2nd pressure hPa : 80

Rack travel in m: 9.40...9.80

3rd pressure hPa : 175

Rack travel in m: 10.30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

rpm : 750 Speed

Del.quantity cm3/: 116.0...119.0 1000 s: (114.0...121.0)

Aneroid pressure h: -

rpm : 500 Speed

M10

Del.quantity cm3/: 86.0...90.0 1000 s: (84.0...92.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.40

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 190.0...210.0 1000 s: (185.0...215.0)

LOW IDLE

rpm : 425 Speed

Rack travel in mm: 5.30...5.50 Del.quantity cm3/: 20.5...24.5

1000 s: (18.5...26.5)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE23746

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark = 15.5° after start of delivery cyl. 1.

Note remarks

Test sheet

: IHC

Edition

: 13.03.92

Replaces

Test oil

: ISO-4113

Combination no. : 0 400 876 396

Injection pump

Pump designation : PES6A95D32DRS2779

EP type number

: 0 410 896 903

Governor

Governor design.

: RSV350...1250A5c2258

Governer no.

: 0 420 233 292

Customer

Customer-spec. information : NAVISTAR

Engine

: DT 466

1st version kW

: 142.0

Rated speed

: 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

assembly

: 1 688 901 110

Opening

pressure, bar

: 250...253

Orifice plate

diameter mm

: 0,5

Test lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.45...2.55 : (2.40...2.60) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Fhasing

Spread

: 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1250

Rack travel in mm: 13.40...13.50

Del.quantity cm3/: 9.7...9.9

100 s: (9.5...10.1)

cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 1.1...1.5

100 s: (0.9...1.8)

cm3 : 0.3

Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed

rpm : ?

Rack travel in mm : ?

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1250

Aneroid pressure h: 900

: 97.0...99.0 Del.quantity

1000 : (95.0...101.0)

Spread

: 3.50 cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 52...60

M11

Testing:

1st rack travel in: 12.40

rom : 1290...1300 Speed

2nd rack travel in: 4.00

rom : 1355...1365 Speed

3rd rack travel in: 4.00

rpm : 1360...1370 Speed

4th rack travel in: 1450

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 19...27

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 5.3

Testing:

: 100 Speed rom

Minimum rack trave: 19.00

rpm : 350 Speed

Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

rpm : 350...500 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed nom

hPa : 900 Pressure

Rack travel mm : 13.40...13.50

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.30...9.50

2nd pressure hPa : 340

Rack travel in m: 10.50...10.60

3rd pressure hPa : 555

Rack travel in m: 12.30...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500

Del.quantity cm3/: 66.0...70.0 1000 s: (64.0...72.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40

rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 5.20...5.40 Del.quantity cm3/ : 11.5...15.5

1000 s: (9.0...18.0) cm3 : 3.50

Spread

1000 s: (5.50)

Remarks:

: NAVISTAR #1818556091

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of

delivery of cylinder 1

Note remarks

Test sheet

: 03.04.92 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 876 397

Injection pump

Pump designation : PES6A95D410RS2797

EP type number : 0 410 896 900

Governor

: RSV350...1400A0c2006 Governor design.

-8L

Governer no. : 0 420 232 580

Customer-spec, information

: MERCEDES-BEN7 Customer

: OM 366 Engine

1st version kW : 100.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1380

Rack travel in mm : 10.10...10.20

Del.guantity cm3/: 6.1...6.3

100 s: (5.9...6.5)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm: 8.0...8.2

Del.quantity cm3/: 0.6...1.0

100 s: (0.3...1.2)

cm3 : 0.3 Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1380Speed

Del.quantity : 61.0...63.0

1000 : (59.0...65.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 107...115

Testing:

1st rack travel in: 9.70 Speed rpm : 1430...1435

2nd rack travel in: 4.00

rpm : 1490...1507 Speed

4th rack travel in: 1650

rpm : 0.30...1.70 Spread cm3 : 3.50Speed 1000 s: (5.50) LOW IDLE 1 Control lever Remarks: position degrees: 74...82 Setting point w/out bumper spring : 350 Speed rpm Rack travel in mm: 8.1 Testing: rpm : 100 Speed Minimum rack trave: 19.50 Speed rpm : 350
Rack travel in mm : 8.00...8.20
Rack travel in mm : 2.00 Speed rpm : 480...540 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 TORQUE CONTROL Torque control curve - 1st version st speed rpm : 1380 Rack travel in m: 10.10...10.20 1st speed : 400 2nd speed rpm Rack travel in m: 11.30...11.60 3rd speed rpm : 630 Rack travel in m: 10.90...11.20 4th speed rpm : 925 Rack travel in m: 10.40...10.70 FUEL DELIVERY CHARACTERISTICS 1st version : 400 Speed rom Del.quantity cm3/: 49.0...52.0 1000 s: (46.5...54.5) Speed rpm: 630 Del.quantity cm3/: 49.0...53.0 1000 s: (46.5...55.5) : 925 rpm Speed Del.quantity cm3/: 57.0...61.0 1000 s: (54.5...63.5) STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) Rack travel in mm: 14.60...15.00 LOW IDLE rpm : 350 Speed Rack travel in mm: 8.00...8.20 Del.quantity cm3/: 6.0...10.0

M14

1000 s: (3.5...12.5)

Note remarks

Test sheet : UNI 13,8 f : 13.03.92 Edition : 10.91 Replaces Test oil : ISO-4113

Combination no. : 0 401 846 891

Injection pump

Pump designation : PE6P12OA72ORS3216 EP type number : 0 411 826 781

Governor

Governor design. : RQV300...975PA898K

: D 421 815 197 Governer no.

Customer-spec. information : IVECO-UNIC Customer

: 8210.42.269 Engine

1st version kW : 261.0 : 1950 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm: 9.00...12.00

Firing order: 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 975 1st speed

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 23.5...23.7

100 s: (23.2...24.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 4.4...4.6

Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

travel mm : 1.60...2.00

rpm : 400 2nd speed

travel mm 3.20...4.00

: 750 3rd speed rpm

: 6.70...7.10 : 975 travel mm

4th speed rpm

: 9.60...9.80 travel mm

rpm : 1200 5th speed

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1015

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975 Aneroid pressure h: 1200

235.0...237.0 1000 : (232.0...240.0) Del.quantity : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 117...125 Testing: 1st rack travel in: 11.80 rpm : 1015...1025 Speed 2nd rack travel in: 4.00 rpm : 1085...1115 Speed 4th rack travel in: 1200 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 71...79 Testing: Speed rpm : 100 Minimum rack trave: 6.00 rpm : 300 Speed Rack travel in mm : 4.40...4.60 CONSTANT REGULATION rpm : 280...400 Speed TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version 1st speed rpm : 975 Rack travel in m: 12.80...12.90 2nd speed rpm : 830 Rack travel in m: 12.40...12.60 d speed rpm : 500 Rack travel in m: 11.30...11.50 3rd speed 4th speed rpm : 350 Rack travel in m: 11.20...11.50 Aneroid/Altitude Compensator Test 1st version Setting pm : 975 hPa : 1200 Speed rpm Pressure Rack travel mm : 12.80...12.90 Measurement

1/min: 975

Rack travel in m: 9.60...9.80

1st pressure hPa : -

2nd pressure hPa : 600

Rack travel in m: 11.40...11.50 3rd pressure hPa : 400 Rack travel in m: 10.10...10.30 START CUT-OUT 1/min: 240 (260) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 500 Speed Del.quantity cm3/: 188.0...194.0 1000 s: (185.0...197.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 131.0...133.0 1000 s: (128.0...136.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.80 rpm : 1015...1025 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0) Remarks:

M16

Speed

Note remarks

Test sheet : HAE 12,0 a : 27.03.92 Edition : 01.92 Replaces : ISO-4113 Test oil

Combination no. : 0 401 846 933

Injection pump

Pump designation : PE6P110A320RS3260 EP type number : 0 411 816 775

Governor

Governor design. : RQ250, 1(150PA969) : 0 421 801 538 Governer no.

Customer-spec. information Customer : HAEP

Engine : X6130 NA

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 089

Outside diameter x Wall thickness

: 8.00x2.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1035

Rack travel in mm : 11.40...11.50

Del.guantity cm3/: 13.0...13.3

100 s: (12.7...13.5)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm : 7.6...8.0 Del.quantity cm3/: 1.5...2.0 100 s: (1.2...2.2)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 500

Speed

Rack travel in mm : 12.60...14.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1035 Speed

: 130.0...133.0 Del.quantity

1000 : (127.5...135.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm

Rack travel in mm: 13.4

Testing:

1st rack travel in: 10.40

rpm : 1085...1100 Speed

2nd rack travel in: 4.00

rpm : 1110...1140 Speed

4th rack travel in: 1250

: 0.00...1.80 Speed rpm

LOW IDLE 1

Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 7.8 Testina: : 100 Speed rpm Minimum rack trave: 9.30 rpm : 250 Speed Rack travel in mm : 7.70...7.90 Rack travel in mm : 2.00 : 295...335 Speed mon TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version 1st speed rpm : 1035 Rack travel in m: 11.40...11.50 2nd speed rpm : 600 Rack travel in m: 12.00...12.30 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 129.0...134.0 1000 s: (126.0...137.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.40 Speed rpm : 1085...1100 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 180.0...200.0 1000 s: (176.0...204.0) LOW IDLE Speed nom : 250
Rack travel in mm : 7.60...8.00
Del.quantity cm3/ : 15.0...20.0 1000 s: (12.5...22.5) cm3 : 4.50 Spread

1000 s: (7.50)

Remarks:

Note remarks

Test sheet

: HAE

Edition

: 27.03.92

Replaces

Test oil

: ISO-4113

Combination no. : 0 401 856 706

Injection pump

Pump designation : PE6P110A721RS3101

EP type number

: 0 411 816 725

Governor

Governor design. : RQ300/1200PA412

Governer no.

: 0 421 801 172

Customer-spec. information Customer

: HAEP

Engine

: WD615.67

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Openina

pressure, bar

: 172...175

Test Lines

: 1 680 750 089

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.80...2.90

: (2.75...2.95)

Rack travel in mm: 9.00...12.00

Firing order

: 1-5-3-6-

1st speed

BASIC SETTING

Phasing

rpm: 1200

Tolerance + - *

Time to cyl. no. : 1

Rack travel in mm : 12.00...12.10

: 0.50 (0.75)

Del.quantity cm3/: 16.2...16.4

: 0-60-120-180-240-300

100 s: (15.9...16.7)

Spread

cm3 : 0.4

100 s: (0.7)

2nd speed

rpm : 300.0

Rack travel in mm: 5.9...6.1

Del.quantity cm3/: 1.2...1.8

100 s: (0.9...2.0)

Spread

cm3 : 0.4 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 600 Speed

Rack travel in mm : 15.40...16.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1200

Aneroid pressure h: 700

Del.quantity

: 162.0...164.0 1000 : (159.0...167.0)

Spread

cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version

Setting point:

rpm

Rack travel in mm : 16.0

Testing:

Speed

1st rack travel in: 11.00

Speed rpm : 1245...1260 2nd rack travel in: 4.00

Speed rpm : 1325...1355 4th rack travel in: 1450

rpm : 0.00...1.50

LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.0 Testina: Speed rpm : 100 Minimum rack trave: 7.50 : 300 Speed mpm: Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 rpm : 405...445 Speed TORQUE CONTROL Dimension a mm : 0.35 Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 12.00...12.10 rpm : 600 2nd speed Rack travel in m: 12.60...12.90 3rd speed rpm : 985 Rack travel in m: 12.40...12.60 4th speed rpm : 1075 Rack travel in m: 12.20...12.40 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm hPa : 700 Pressure : 12.40...12.60 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.50...9.70 2nd pressure hPa : 420 Rack travel in m: 11.50...11.60 3rd pressure hPa : 330 Rack travel in m: 10.20...10.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed : 700 rpm Del.quantity cm3/: 165.0...169.0 1000 s: (163.0...171.0) Aneroid pressure h: -Speed rpm: 700 Del.quantity cm3/: 112.0...114.0 1000 s: (109.5...116.5) 1st version 1mm rack travel less than full load rack tr: 11.00 rpm : 1245...1260 Speed STARTING FUEL DELIVERY Speed rpm Del.quantity cm3/: 205.0...235.0 1000 s: (201.0...239.0) Rack travel in mm: 17.30...17.70 Remarks:

Note remarks

Test sheet : LIE Edition : 03.04.92

Replaces : -

Test oil : ISO-4113

Combination no. : 0 401 876 791

Injection pump

Pump designation : PE6P110A320LS3859 EP type number : 0 411 816 784

Governor

Covernor design. : RSV400...900P1A554

Governer no. : 0 421 833 376

Customer—spec. information Customer : LIEBHERR

Engine : D 9306 TI

1st version kW : 230.0 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70 : (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1-6-3-5-2-4

Phasing : 0-75-120-195-240-315

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 14.10...14.20

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm: 400.0

Rack travel in mm : 6.3...6.5 Del.quantity cm3/ : 1.9...2.4

100 s: (1.6...2.6) Spread cm3 : 0.4

Spread cm3 : 0.4 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 peed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1000 Aneroid pressure h: 1200

Del.quantity : 183.0...185.0

1000 : (180.5...187.5) Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 96...102

Testing:

1st rack travel in: 13.10

Speed rpm : 1040...1050

2nd rack travel in: 4.00

rpm : 1080...1110 Speed 3rd rack travel in: 4.00 Speed rpm : 1090...1120 4th rack travel in: 1260 rpm : 0.30...1.40 Speed LOW IDLE 1

Control lever position degrees: 74...80 Setting point w/out bumper spring : 400 rpm Rack travel in mm: 5.9 Speed rpm: 400 Rack travel in mm: 6.30...6.50

Rack travel in mm : 2.00 : 450...510 Speed rpm

Aneroid/Altitude Compensator Test

1st version Setting pm : 550 hPa : 1200 Speed rpm Pressure

Rack travel mm : 14.10...14.20 Measurement

1/min: 550 Speed

1st pressure hPa : -Rack travel in m: 13.00...13.20 2nd pressure hPa : 525 Rack travel in m: 13.80...13.90

3rd pressure hPa : 475

Rack travel in m: 13.30...13.50

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: rpm : 550 Speed Del.quantity cm3/: 160.0...162.0 1000 s: (157.5...164.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.10 rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

: 100 Speed rom

Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0)

LOW IDLE

Speed rpm : 400 Rack travel in mm : 6.30...6.50 Del.quantity cm3/ : 19.0...24.0 1000 s: (16.5...26.5)

cm3 : 4.50Spread 1000 s: (7.50)

Remarks:

M22

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.80...2.90 Prestroke mm : (2.75...2.95) Note remarks Rack travel in mm : 9.00...12.00 : 6-2-4-1-5-3 Test sheet : MAN 11,9a42 Firing order Edition : 27.03.92 Replaces : 06.91 Test oil : ISO-4113 Phasina : 0-60-120-180-240-300 Combination no. : 0 402 036 081 : 0.50 (0.75) Tolerance + - ° Injection pump Pump designation : PES6P120A720/3LS470-Time to cyl. no. : 6 BASIC SETTING EP type number : 0 412 026 050 Governor Governor design: : RQ300/1000PA813-16 1st speed rpm: 750 : 0 421 801 531 Governer no. Rack travel in mm : 10.30...10.40 Customer-spec. information Del.quantity cm3/: 18.5...18.7 Customer : MAN 100 s: (18.2...19.0) : D2866LF 04..LH01 Engine cm3 : 0.51st version kW : 221.0 Spread : 2000 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 Rack travel in mm: 4.7...4.9 Test oil Del.quantity cm3/: 1.2...1.8 inlet temp. °C : 38...42 100 s: (0.9...2.1) Overflow valve Spread cm3 : 0.8: 1 419 992 198 100 s: (1.2) GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Test nozzle holder Degree: -2 : 1 688 901 019 rpm : 600 assembly Speed Rack travel in mm : 19.20...20.80 Openina FULL LOAD DELIV. AT FULL LOAD STOP pressure, bar : 207...210 Orifice plate 1st version diameter mm : 0,8 Speed rpm : 750Aneroid pressure h: 1000 Del.quantity : 185.0...187.0 1000 : (182.0...190.0) Test lines : 1 680 750 075 : 5.00 Spread cm3 1000 : (9.00) Outside diameter x Wall thickness x Length mm : 8.00x2.50x1000 RATED SPEED 1st version (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. Setting point: per values ___ Speed rpm : 600 Rack travel in mm: 20.0 BEGINNING OF DELIVERY Test pressure, bar: 30...32 Testing:

1st rack travel in: 9.20 rpm : 1045...1060 Speed 2nd rack travel in: 4.00 rpm : 1110...1140 Speed 4th rack travel in: 1250 rpm : 0.00...1.00 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 4.8 Testing: Speed rpm : 100 Minimum rack trave: 6.30 rpm : 300 Rack travel in mm : 4.70...4.90 Rack travel in mm: 2.00 : 355...395 COM TORQUE CONTROL Dimension a mm : 0.30 Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 10.20...10.30 rpm : 750 2nd speed Eack travel in m: 10.90...11.10 rpm : 850 3rd speed Rack travel in m: 10.50...10.70 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed mdu Pressure hPa : 1000 : 10.30...10.40 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 85 Rack travel in m: 9.30...9.40 3rd pressure hPa : 160 Rack travel in m: 9.70...10.00 START CUT-OUT 1/min: 190 (210) Speed FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 191.0...197.0 1000 s: (188.0...200.0) Aneroid pressure h: 1000 Speed rpm: 650 Del.quantity cm3/: 176.0...182.0 1000 s: (173.0...185.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.20 Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 225.0...245.0 1000 s: (221.0...249.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 12.0...18.0
1000 s: (9.0...21.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3--7053

Setting and blocking of pointer of start-of-delivery sensor on cyl. 6 start of delivery

Speed

1st version

Aneroid pressure h: 1000

rpm : 1000

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAN 11.9 u1 : 13.03.92 Test sheet Edition : 09.91 Replaces Test oil : ISO-4113 Combination no. : 0 402 036 740 Injection pump Pump designation : PES6P120A720/3LS3255 EP type number : 0 412 026 739 Governor Governor design. : RQ300/1000PA813-13 : 0 421 801 529 Governer no. Customer-spec. information : MAN Customer Engine : D2366LF03 1st version kW : 273.0 : 2000 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Openina : 207...210 pressure, bar Orifice plate diameter mm : 0.8 Test lines : 1 680 750 075 Outside diameter x Wall thickness : 8.00X2.50X1000 x Length mm (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm : (3.65...3.85) Rack travel in mm : 14.50...15.50 : 6-2-4-1-5-3 Firing order : 0-60-120-180-240-300 Phasing : 0.50 (0.75) Tolerance + - ° Time to cyl. no. : 6 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 15.00...15.10 Del.quantity cm3/: 24.2...24.4 100 s: (23.9...24.7) cm3 : 0.5Spread 100 s: (0.9) 2nd speed rpm : 300.0 Rack travel in mm : 4.9...5.3 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6) cm3 : 0.8Spread 100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 550 Speed Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 700 Speed Aneroid pressure h: 1200 : 242.0...244.0 Del.quantity 1000 : (239.0...247.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Setting point: Speed rpm Rack travel in mm : 20.0

1st rack travel in: 13.80

rpm : 1045...1060 Speed 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring : 300 Speed rom Rack travel in mm: 5.0

Testina: Speed COM : 200 Minimum rack trave: 6.50

npm : 300 Rack travel in mm : 4.90...5.10 Rack travel in mm: 2.00

: 360...400 Speed COM

TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version

1st speed rpm : 1000 Rack travel in m: 15.00...15.10

nom : 700 2nd speed

Rack travel in m: 15.30...15.50

Aneroid/Altitude Compensator Test

1st version Settina

Speed : 500 rom hPa : 1200 Pressure

Rack travel mm : 15.00...15.10

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.70...11.90

2nd pressure hPa : 110

Rack travel in m: 12.00...12.10

3rd pressure hPa : 470

Rack travel in m: 13.70...14.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 1000 Del.quantity cm3/ : 243.0...247.0 1000 s: (240.0...250.0)

cm3 : 8.00Spread 1000 s: (12.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.80 rpm : 1045...1060 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0 1000 s: (216.0...244.0)

LOW IDLE

rpm : 300 Speed

Pack travel in mm: 4.90...5.30 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0)

cm3 : 8.00 Spread 1000 s: (12.00)

Remarks:

: MAN-NR. 0-7050 Setting and blocking of pointer of start-of-delivery sensor on cyl. 6

start of delivery

Note remarks

: MAN 11,9 u6 : 7.4.92 Test sheet Edition : 27.02.91 Replaces

: ISO-4113 Test oil

Combination no. : 0 402 036 744

Injection pump

Pump designation : PES6P120A720/3LS3255

: 0 412 026 739 EP type number

Governor

: RQV300...1000PA876-Governor design.

12

: 0 421 813 897 Governer no.

Customer-spec. information : MAN Customer

: D2866LF05 Engine

: 272.0 1st version kW : 2000 Rated speed

YEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifica plate

diameter mm : 0,8

: 1 680 750 037 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80 : (3.65...3.85) Rack travel in mm : 14.50...15.50 Firing order : 6-2-4-1-5-3

: 0-60-120-180-240-300 Phasing

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10 & maximum rack tra: 14.5...15.5 Difference * CS : 2.00...4.00

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 15.10...15.20

Del.quantity cm3/: 24.4...24.6

100 s: (24.1...24.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 4.8...5.2 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1045 1st speed

9.70...9.90 travel mm

rpm : 300 2nd speed

: 0.90...1.30 travel mm

: 550 3rd speed rpm

: 3.70...4.30 travel mm

: 800 4th speed rpm

: 6.60...7.00 travel mm

: 1300 5th speed rpm

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1100 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 1200

Del.quantity : 244.0...249.0)

: 5.00 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 298...306

Testing:

1st rack travel in: 14.10

Speed rpm : 1040...1050

2nd rack travel in: 4.00

rpm : 1150...1180 Speed

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 254...262

Testing:

Speed **LIDW** : 200 Minimum rack trave: 6.50 rpm : 300

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

rem : 280...400 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 hPa : 1200 Speed rom Pressure

Rack travel mm : 15.10...15.20

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 11.70...11.90 2nd pressure hPa : 110

Rac' travel in m: 12.00...12.10

3rd pressure hPa : 470

Rack travel in m: 13.60...14.00

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 rpm : 1000 Speed

Del.quantity cm3/: 243.0...247.0 1000 s: (240.0...250.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 134.0...136.0 1000 s: (131.0...139.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.10

rpm : 1040...1050 Speed

INTERMEDIATE RATED SPEED Rack travel in mm: 4.00

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 220.0...240.0

1000 s: (216.0...244.0)

LOW IDLE

Speed mcm

Rack travel in mm : 4.80...5.20 Del.quantity cm3/: 17.0...23.0

1000 s: (14.0...26.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: MAN-NR. 3-7039

Setting and blocking of pointer of start-of-delivery sensor on cyl. 6

start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : RVI 9,8 r Edition : 03.04.92 : 08.91 Replaces Test oil : ISO-4113 : 0 402 046 829 Combination no. Injection punp Pump designation : PES6P120A320RS3284 EP type number : 0 412 026 749 Governor : RQ\/275...1050P4995~1 Governor design. Governer no. : 0 421 813 941 Customer-spec. information : RVI Customer : MIDR 062045 8/3 **Engine** 1st version kW : 186.0 : 2100 Rated speed TEST BENCH REQUIPEMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 105 assembly Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 089 Outside diameter x Wall thickness x Length mm : 8.00x2,50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60 : (3.45...3.65) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasing : 0.50 (0.75) Tolerance + - ° BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 10.50...10.60 Del.quantity cm3/: 14.8...15.0 100 s: (14.5...15.3) Spread cm3 : 0.5 100 s: (0.9) rpm : 275.02nd speed Rack travel in mm: 4.9...5.3 Del.quantity cm3/: 2.2...2.6 100 s: (1.9...2.9) cm3 : 0.8Spread 100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1130 1st speed : 8.10...8.30 travel mm : 275 : 0.70...0.90 2nd speed man travel mm 3rd speed : 450 mgs : 2.80...3.40 : 750 travel mm 4th speed rpm : 5.50...5.90 travel mm : 1450 5th speed man : 11.00...12.00 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1220 Speed Rack travel in mm : 9.20...11.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 Aneroid pressure h: 1000 Del.quantity : 148.0...150.0 Del.quantity : 140.0...153.0)

Spread cm3 : 5.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 296...304 Testing: 1st rack travel in: 9.50 Speed rpm : 1125...1135 2nd rack travel in: 4.00 rpm : 1210...1240 Speed 4th rack travel in: 1350 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 243...251 Testing: : 200 Speed rom Minimum rack trave: 6.80 : 275 COM Rack travel in mm : 5.30...5.50 CONSTAINT REGULATION rpm : 340...440 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 1000 Pressure : 10.50...10.60 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.90...9.20 2nd pressure hPa : 240
Rack travel in m: 10.10...10.20
3rd pressure hPa : 130
Rack travel in m: 9.40...9.60 START CUT-OUT 1/min : 210 (230) Speed FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 144.0...150.0 1000 s: (141.0...153.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 101.0...103.0 1000 s: (98.0...106.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.50 rpm : 1125...1135 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 160.0...190.0 1000 s: (156.9...194.0) LOW IDLE Speed rpm : 275 Rack travel in mm: 5.20...5.60 Del.quantity cm3/: 22.0...26.0 1000 s: (19.0...29.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Speed

1st version

Aneroid pressure h: 1000

rpm : 1050

Note remarks

: RVI 14,9 g : 05.07.90 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 048 703

Injection pump

Pump designation : PES8P120A320RS3175

: 0 412 028 703 EP type number

Governor

Governor design. : RQ750PA804 : 0 421 801 351 Governer no.

Customer-spec. information : RVI Customer

: MIVS(R)083530 **Engine**

1st version kW : 320.0 : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mn : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-8-4-2-7-3-6-5 Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 27.9...28.1

100 s: (27.6...28.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 4.4...4.8 Del.quantity cm3/: 1.5...2.1

100 s: (1.2...2.4)

cm3 : 0.8Spread 100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 279.0...281.0 Del.quantity 1000 : (276.0...284.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: ?

Testing:

1st rack travel in: 11.40 Speed rpm : 750...755

2nd rack travel in: 4.00 Speed rpm: 782...795

4th rack travel in: 900

rom : 0.00...1.00Speed

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40 Speed rpm : 750...755

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Generator set

: 3.50...3.60 : (3.45...3.65) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Firing order : 1-2-7-8-4-5-Note remarks Test sheet : 13.03.92 Edition Replaces Test oil : ISO-4113 : 0-45-90-135-180-225-Phasing 270-315 Combination no. : 0 402 048 707 Tolerance + - ° : 0.50 (0.75) Injection pump Pump designation : PES8P120A320RS3300 BASIC SETTING : 0 412 028 707 EP type number rpm: 1350 Governor 1st speed Governor design. : RQV350...1400PA1028 : 0 421 813 987 Rack travel in mm : 14,20...14.30 Governer no. Customer-spec. information Del.quantity cm3/: 27.5...27.7 Customer : FINCANTIERI 100 s: (27.2...28.0) : 1308 V Engine cm3 : 0.5 Spread : 500.0 1st version kW : 2800 100 s: (0.9) Rated speed rpm : 350.0 TEST BENCH REQUIREMENTS 2nd speed Rack travel in mm : 6.7...5.9 Del.quantity cm3/: 3.6...4.2 Test oil 100 s: (3.3...4.5) inlet temp. °C : 38...42 cm3 : 0.8Spread 100 s: (1.2) Overflow valve : 1 419 992 198 (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder GUIDE SLEEVE TRAVEL : 1 688 901 105 assembly 1st speed rpm : 1410 travel mm : 3.90...9.10 rpm : 350 Opening 2nd speed : 207...210 : 1.40...1.80 pressure, bar travel mm rpm : 520 : 3.20...3.80 rpm : 910 3rd speed Orifice plate travel mm diameter mm : 0,8 4th speed : 5.20...5.60 travel mm : 1650 5th speed rpm : 1 680 750 089 : 11.00...12.00 Test lines travel mm Outside diameter GUIDE SLEEVE POSITION x Wall thickness Control-lever position : 8.00x2.50x600 Degree: -1 rpm : 1415 x Length mm Speed Rack travel in mm : 12.90...15.50 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values ____ 1st version

Speed

rpm : 1350

Aneroid pressure h: 1000

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Del.quantity : 2/3.0...280.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 13.20

rpm : 1380...1390 Speed

2nd rack travel in: 4.00

rpm : 1545...1575 Speed

4th rack travel in: 1650

rpm : 0.30...1.70Speed

LOW IDLE 1

Control Lever

position degrees: 67...75

Speed rpm : 350 Rack travel in mm : 6.70...6.90

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rpm hPa : 1000 Pressure

Rack travel mm : 14.20...14.30

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.00...9.40

2nd pressure hPa : 500

Rack travel in m: 12.90...13.10

3rd pressure hPa : 370

Rack travel in m: 10.30...10.70

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 Speed rpm : 600

Del.quantity cm3/: 291.0...297.0 1000 s: (288.0...300.0)

Aneroid pressure h: -Speed rpm : 500

Del.quantity cm3/: 138.0...140.0

1000 s: (135.0...143.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.20

rbm : 1380...1390 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 435.0...465.0

1000 s: (431.0...469.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 6.70...6.90 Del.quantity cm3/: 36.0...42.0

.

1000 s: (33.0...45.0)

cm3 : 8.00Spread 1000 s: (12,00)

Remarks:

APPLICATION

Ship

N06

Note remarks

: DEE 7,6 y : 13.03.92 Test sheet Edition : 12.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 076 723

Injection pump

Pump designation : PES6P120A720RS3203 : 0 412 026 728 EP type number

Governor

Governor design. : RSV400...1100P2A534-

: 0 421 833 276 Gaverner no.

Customer-spec. information : JOHN DEERE Customer

: 6076 AF & HF Engine

1st version kW : 187.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00X3.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.55...3.65 : (3.50...3.70) Prestroke mm

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm : 11001st speed

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 15.2...15.4

100 s: (15.0...15.6)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 400.02nd speed

Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 2.5...2.9

100 s: (2.3...3.2)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1100 Speed Aneroid pressure h: 1200

Del.quantity : 152.0...154.0 1000 : (150.0...156.0)

: 4.00 cm3

1000 : (6.50)

RATED SPEED

Spread

1st version Control lever

position degrees: 44...52

NO7

Testing:

1st rack travel in: 11.00

rpm : 1150...1160 Speed

2nd rack travel in: 4.00

: 1225...1235 Speed rpm

3rd rack travel in: 4.00

rpm : 1220...1250 Speed

4th rack travel in: 1400

Speed rom : 0.30...1.40

LOW IDLE 1

Control Lever

position degrees: 20...28

Setting point w/out bumper spring

rpm : 400

Rack travel in mm: 5.1

Testing:

Speed rom : 100

Minimum rack trave: 19.00

: 400 Speed rpm

Rack travel in mm : 5.50...5.70

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 12.00...12.10

2nd speed rpm : 650

Rack travel in m: 13.20...13.40

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 1200 Pressure

Rack travel mm : 13.20...13.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.60...10.80 2nd pressure hPa : 740 Rack travel in m: 11.40...11.50

3rd pressure hPa : 955

Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

rpm : 650 Speed

Del.quantity cm3/: 184.0...188.0 1000 s: (182.0...190.0)

Aneroid pressure h: -

: 800 Speed COM

Del.quantity cm3/: 118.0...122.0

1000 s: (116.0...124.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1150...1160

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 90.0...110.0 1000 s: (85.0...115.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.50...5.70

Del.quantity cm3/: 25.5...29.5 1000 s: (23.0...32.0)

cm3 : 6.00Spread

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32033

Adjustment without torque-control spring retainer with 0.5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : DEE 7,6 y 2 Edition : 13.03.92 Replaces : 02.92 : ISO-4113 Test oil

: 0 402 076 742 Combination no.

Injection pump

Pump designation : PES6P120A720RS3203

EP type number : 0 412 026 728

Governor

Governor design. : RSV400...1050P2A534-

: 0 421 833 356 Governer no.

Customer-spec. information

: JOHN DEERE Customer

: 6076 HZ030 Engine

: 193.0 1st version kw : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

x Length mm : 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.55...3.65 : (3.50...3.70) Prestroke mm

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st_speed rpm: 1050

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 15.7...15.9

100 s: (15.5...16.1)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 400.0 2nd speed Rack travel in mm : 6.7...6.9 Del.quantity cm3/ : 3.9...4.3 100 s: (3.6...4.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 900

: 157.5...159.5 Del.quantity 1000 : (155.5...161.5)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 41...49

N09

Testina:

1st rack travel in: 11.30

Speed rpm : 1095...1105

2nd rack travel in: 4.00

rpm : 1155...1165 Speed

3rd rack travel in: 4.00

Speed rpm : 1150...1180 4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 16...24

Setting point w/out bumper spring

Speed rpm : 400 Rack travel in mm : 6.3

Testina:

: 100 Speed rpm Minimum rack trave: 19.00 : 400 Speed rpm

Rack travel in mm : 6.70...6.90

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 12.30...12.40 2nd speed rpm : 700

Rack travel in m: 13.70...13.90

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rom hPa : 900 Pressure

: 13.70...13.90 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.70...10.90

2nd pressure hPa : 390 Rack travel in m: 11.40...11.50

3rd pressure hPa : 605

Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 700 Del.quantity cm3/ : 192.0...196.0 1000 s: (190.0...198.0)

Aneroid pressure h: -

rpm : 800 Speed

Del.quantity cm3/: 116.5...120.5 1000 s: (114.5...122.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 1095...1105 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 90.0...110.0 1C00 s: (35.0...115.0) Rack travel in mm: 20.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in nm : 6.70...6.90 Del.quantity cm3/: 39.0...43.0 1000 s: (36.5...45.5)

cm3 : 8.00 1000 s: (12.00) Spread

Remarks:

: JOHN DEERE # RE47549

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : DEE 7,6 y 3 : 13.03.92 Edition : 02.92 Replaces : ISO-4113 Test oil

Combination no. : 0 402 076 743

Injection numb

Pump designation : PES6P120A720RS3203 : 0 412 026 728

EP type number

Governor

: RSV425...1100P2A534-Governor design.

: 0 421 833 370 Coverner no.

Customer-spec. information : JOHN DEERE Customer

Engine : 6076 AN 030

1st version kW : 187.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00X3.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.55...3.65 : (3.50...3.70) Prestroke mm

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm: 12.00...12.10

Del.quantity cm3/: 15.2...15.4

100 s: (15.0...15.6)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 425.0 2nd speed Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 2.5...2.9 100 s: (2,3...3.2)

Spread cm3 : 0.6100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 1200

: 152.0...154.0 Del.quantity 1000 : (150.0...156.0)

: 4.00 cm3 Spread

1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 44...52

Testing:

1st rack travel in: 11.00

rpm : 1150...1160 Speed

2nd rack travel in: 4.00

rom : 1225...1235 Speed

3rd rack travel in: 4.00

rpm : 1220...1250 Speed

4th rack travel in: 1400

rpm : 0.30...1.40Speed

LOW IDLE 1

Control Lever

position degrees: 20...28

Setting point w/out bumper spring

rom : 425 Rack travel in mm: 5.1

Testing:

Speed : 100 rpm

Minimum rack trave: 19.00

: 425 rpm

Rack travel in mm : 5.50...5.70

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 12.00...12.10

2nu speed rpm : 650

Rack travel in m: 13.20...13.40

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm

Pressure hPa : 1200

Rack travel mm : 13.20...13.40

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 10.60...10.80

2nd pressure hPa : 740

Rack travel in m: 11.40...11.50

3rd pressure hPa : 955

Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed : 650

(DO

Del.quantity cm3/: 184.0...188.0 1000 s: (182.0...190.0)

Aneroid pressure h:

: 800 Speed rpm

N12

Del.quantity cm3/: 118.0...122.0 1000 s: (116.0...124.0)

BREAKAWAY

1st varsion

1mm rack travel less than

full load rack tr: 11.00

rpm : 1150...1160 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 90.0...110.0

1000 s: (85.0...115.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 425 Rack travel in mm : 5.50...5.70

Del.quantity cm3/: 25.5...29.5

1000 s: (23.0...32.0)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47394

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : FIN

Edition : 27.03.92

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 076 744

Injection pump

Pump designation : PES6P120A720LS3298

: 0 412 026 754 EP type number

Governor

Governor design. : RSV350...1200P0A553

: 0 421 833 371 Governer no.

Customer-spec. information

Customer : FINCANTIERI

Engine : L 1306

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter

x Wall thickness

: 8.00X2.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.50...3.60 : (3.45...3.65)

Rack travel in mm : 10.00...11.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 15.20...15.30

Del.quantity cm3/: 27.5...27.7

100 s: (27.2...28.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 350.0Rack travel in mm: 7.4...7.6

Del.quantity cm3/: 1.5...2.1

100 s: (1.2...2.4)

cm3 : 1.0 100 s: (1.4) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 1300

Del.quantity : 2(3.0...280.0)

: 6.00 cm3

Spread

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing:

1st rack travel in: 14.20

rpm : 1240...1250 Speed

2nd rack travel in: 4.00

Speed rpm : 1420...1450

3rd rack travel in: 4.00

rpm : 1470...1530 Speed

4th rack travel in: 1650

Speed rpm : 0.30...1.40

LOW IDLE 1 Control Lever

position degrees: 74...82

Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 7.0 rpm Speed

Rack travel in mm : 6.90...7.10

Rack travel in mm: 2.00

: 670...730 Speed rom

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200
Rack travel in m: 15.20...15.30
2nd speed rpm : 500
Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rpm hPa : 1300 Pressure

: 15.20...15.30 Rack travel mm

Measurement

1/min : 600Speed

1st pressure hPa : -

Rack travel in m: 10.90...11.10

2nd pressure hPa : 900
Rack travel in m: 14.60...14.70
3rd pressure hPa : 500

Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300 Speed : 600 rpm

Del.quantity cm3/: 286.0...292.0 1000 s: (283.0...295.0)

cm3 : 10.00 Spread 1000 s: (14.0)

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 155.0...157.0

1000 s: (152.0...160.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.20

Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 400.0...420.0

1000 s: (396.0...424.0)

Rack travel in mm : 19.50...21.00

Remarks:

Test electrically-released starting quantity (EES) with 12 volts

Note remarks

Test sheet : DEE

Edition : 13.03.92

Replaces

: ISO-4113 Test oil

: 0 402 076 746 Combination no.

Injection pump

Pump designation : PES6P120A720RS3203

: 0 412 026 728 EP type number

Governor

Governor design. : RSV625...1100P2A534-

10

: 0 421 833 373 Governer no.

Customer-spec. information

Customer : JOHN DEERE

: 6076 AZ 030 Engine

1st version kW : 184.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X3.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke nm : 3.55...3.65

: (3.50...3.70)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 15.3...15.5

100 s: (15.1...15.7)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 625.0 2nd speed

Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 2.7...3.1

100 s: (2.5...3.3)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Aneroid L. Del.quantity 1000 : 153.0...155.0 : (151.0...157.0)

: 4.00 Spread cm3

1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 41...49

N15

Testing:

1st rack travel in: 11.00

Speed rpm : 1150...1760

2nd rack travel in: 4.00

rpm : 1200...1210 Speed

3rd rack travel in: 4.00

rpm : 1190...1220 Speed

4th rack travel in: 1350 rpm : 0.30...1.40Speed

LOW IDLE 1 Control Lever

position degrees: 24...31

Setting point w/out bumper spring

rpm : 625 Rack travel in mm: 5.0

Testina:

Speed rpm : 100 Minimum rack trave: 19.00 : 625 Speed rpm

Rack travel in mm : 4.90...5.10

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

2nd speed

Rack travel in m: 12.00...12.10 and speed rpm : 700 Rack travel in m: 13.40...13.60

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rpm hPa : 1200 Pressure

Rack travel mm : 13.40...13.60

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 10.70...10.90 2nd pressure hPa : 700 Rack travel in m: 11.50...11.60

3rd pressure hPa : 915

Rack travel in m: 12.70...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

rpm_ : 700 Speed

Del.quantity cm3/: 187.0...191.0

1000 s: (185.0...193.0)

Aneroid pressure h: -

Speed : 800 rom

N16

Del.quantity cm3/: 119.5...123.5 1000 s: (117.5...125.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

rpm : 1150...1160 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 90.0...110.0 1000 s: (85.0...115.0) Rack travel in mm: 20.00...21.00

LOW IDLE

rpm : 625 Speed

Rack travel in mm : 5.40. .5.60

Del.quantity cm3/: 27.0...31.0 1000 s: (25.0...33.0)

cm3 : 6.00Spread 1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47398

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : BAO 31,8 e : 13.03.92 Edition : 01.90 Replaces Test oil : ISO-4113

Combination no. : 0 402 630 804

Injection pump

Pump designation: PE12P12OA12ORS7193

EP type number : 0 412 620 820

Governor

Governor design. : RQV275...1000PA938

: 0 421 813 822 Governer no.

Customer-spec. information Customer : BAUDOUIN

: V12P15-2 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.60...3.70 Prestroke mm

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

N17

: 1- 12- 9- 4- 5- 8-11- 2- 3- 10- 7- 6 Firing order

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

: 0.50 (0.75) Tolerance + - °

Time to cyl. no.

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm: 13.50...13.60

Del.guantity cm3/: 37.9...38.1

100 s: (37.6...38.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 275.0 2nd speed Rack travel in mm : 5.8...6.2 Del.quantity cm3/ : 2.7...3.3 100 s: (2.4...3.6)

cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 275 1st speed : 0.60...1.00 travel mm

: 450 2nd speed rpm

: 3.00...3.40 travel mm

700 3rd speed rpm :

: 5.00...5.40 travel mm

rpm : 1000 4th speed

: 7.60...7.80 travel mm

rpm : 1300 5th speed

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1140

Rack travel in mm : 11.20...13.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000Speed

Aneroid pressure h: 900

: 379.0...381.0 Del.quantity

1000 : (376.0...384.0)

cm3 : 5.00 Spread 1000 : (9,00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 12.50

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

: 1150...1180 Speed rom

4th rack travel in: 1250

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 63...71

Testing:

Speed rpm : 100 Minimum rack trave: 7.50

Speed rpm : 275
Rack travel in mm : 5.90...6.10

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 hPa : 900 Pressure

Rack travel mm : 13.50...13.60

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 12.00...12.10

2nd pressure hPa : 600

Rack travel in m: 13.10...13.20
3rd pressure hPa : 300
Rack travel in m: 12.40...12.60

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 324.0...330.0 1000 s: (321.0...333.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.50

Speed rpm : 1040...1050

LOW IDLE

Speed : 275 rpm

Rack travel in mm: 5.80...6.20 Del.quantity cm3/: 27.0...33.0 1000 s: (24.0...36.0)

cm3 : 8.00 Spread 1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

: BAO 31,8 c3 : 03.04.92 Test sheet Edition : 05,90 Replaces

Test oil : ISO-4113

Combination no. :0 402 6第 805

Injection pump

Pump designation: PE12P12OA12ORS7106

: 0 412 620 800 EP type number

Governor

: RQV350...900PA935-1 Governor design.

: D 421 813 820 Governer no.

Customer-spec. information Customer : BAUDOUIN

: V12P15-2 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter nm

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.60...3.70 Prestroke mm : (3.55...3.75)

Rack travel in mm : 9.00...12.00

: 1- 12- 9- 4- 5- 8-11- 2- 3- 10- 7- 6 Firing order

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 33.9...34.1

100 s: (33.6...34.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm: 4.6...5.0 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.40...1.60 travel mm 500 2nd speed rpm

: 3.10...3.70 travel min

: 740 3rd speed rpm : 5.70...6.30 travel mm

: 960 4th speed rpm

: 8.60...8.80 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1000

Rack travel in mm : 9.70...12.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

: 339.0...341.0 Del.quantity 1000 : (336.0...344.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 118...126

Testing:

1st rack travel in: 11.00 Speed rpm: 940...950 2nd rack travel in: 4.00

Speed rpm: 1010...1040 4th rack travel in: 1150

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 86...94

Testing:

Speed rpm : 100 Minimum rack trave: 6.30

Speed rpm : 350 Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

rpm : 330...450 Speed

START CUT-OUT

1/min: 270 (290) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00 rpm : 940...950 Speed

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Note remarks

Test sheet

: BA0

Edition

: 13.03.92

Replaces

Test oil

: ISO-4113

Combination no. : 0 402 630 808

Injection pump

Pump designation: PE12P120A120RS7254

EP type number

: 0 412 620 832

Governor

Governor design. : RQV275...1000PA938

Governer no.

: 0 421 813 822

Customer

Customer-spec. information : BAUDOUIN

Engine

: V12 BTI

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter

x Wall thickness

x Length mm

Prestroke mm

: 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.60...3.70

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order

: 1- 12- 9- 4- 5- 8-11- 2- 3- 10- 7- 6

Phasing

: 0-45-60-105-120-165-180-225-240-285-300-

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

Spread

rpm: 1000

Rack travel in mm: 13.50...13.60

Del.quantity cm3/: 37.9...38.1

100 s: (37.6...38.4)

cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 5.8...6.2
Del.quantity cm3/ : 2.7...3.3

100 s: (2.4...3.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm

: 0.60...1.00 travel mm

rpm : 450 2nd speed

: 3.60...3.40 travel mm

rpm : 700 3rd speed

: 5.00...5.40 travel mm rpm : 1000

4th speed : 7.60...7.80 travel mm

rpm : 1300 5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1140

Rack travel in mm : 11.20...13.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Aneroid pressure h: 900

Del.quantity : 379.0...381.0

1000 : (376.0...384.0)

: 5.00 Spread cm31000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 12.50

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1150...1180 Speed

4th rack travel in: 1250

rom : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 63...71

Testing:

: 100 Speed mcin Minimum rack trave: 7.50 : 275 Speed rpm

Rack travel in mm : 5.90...6.10

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed תוכיח hPa : 900 Pressure

: 13.50...13.60 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 12.00...12.10

2nd pressure hPa : 600
Rack travet in m: 13.10...13.20
3rd pressure hPa : 300

Rack travel in m: 12.40...12.60

START CUT-OUT

1/min: 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 324.0...330.0 1000 s: (321.0...333.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

rpm : 1040...1050 Speed

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.80...6.20
Del.quantity cm3/: 27.0...33.0

1000 s: (24.0...36.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

APPLICATION

Navy

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

N22

Note remarks

Test sheet

: BA0 Edition : 27.03.92

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 630 809

Injection pump

Pump designation : PE12P12OA12ORS7253

EP type number : 0 412 620 831

Governor

Governor design. : RQV400...750PA935

: 0 421 813 819 Governer no.

Customer-spec. information Customer : BAUDCUIN

: V12P15-2 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70 : (3.55...3.75)

Rack travel in mm : 9.00...12.00

: 1- 12- 9- 4- 5- 8-11- 2- 3- 10- 7- 6 Firing order

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.70...14.80

Del.quantity cm3/: 41.9...42.1

100 s: (41.6...42.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 400.0 2nd speed

Rack travel in mm : 4.4...4.8 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.3 Spread

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 419.0...421.0 Del.quantity 1000 : (416.0...424.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: ?

Testing:

1st rack travel in: 13.70

rpm : 750...755 Speed

2nd rack travel in: 4.00

rpm : 781...794 Speed

4th rack travel in: 900

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 4...12

Setting point w/out bumper spring

Speed rpm : 400 Rack travel in mm : 4.6

Testing:

Speed rpm: 100 Minimum rack trave: 6.10 Speed rpm: 400

Speed rpm: 400 Rack travel in mm: 4.50...4.70

START CUT-OUT

Speed 1/min: 340 (360)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.70 Speed rpm : 750...755

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 22,0 b : 27.03.92 Test sheet Edition Replaces : 07.90 : ISO-4113 Test oil Combination no. : 0 402 640 812 Injection pump Pump designation : PE12P120A520LS7820 EP type number : 0 412 620 814 Governor Governor design. : RQV350...1150PA870-4 : 0 421 813 717 Governer no. Customer-spec, information Customer : MERCEDES-BENZ : OM 444 LA Engine 1st version kW : 736.0 : 2300 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 150...170 Test nozzle holder : 1 688 901 019 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0.8 Test Lines : 1 680 750 075

: 8.00X2.50X1000

```
Test pressure, bar: 25...27
Prestroke mm : 4.40...4.50
: (4.35...4.55)
Rack travel in mm : 19.00...21.00
Firing order : 12-1-5-9-8-3-
4-11-10-2-6-7
                     : 0-45-60-105-120-165-
Phasing
                       180-225-240-285-300-
                       345
Tolerance + - "
                     : 0.50 (0.75)
Time to cyl. no. : 12
BASIC SETTING
                rpm: 1150
1st speed
Rack travel in mm : 14.30...14.40
Del.quantity cm3/: 31.2...31.4
               100 s: (30.9...31.7)
Spread
               cm3 : 0.6
               100 s: (1.0)
2nd speed rpm : 350.0 Rack travel in mm : 5.0...6.6
Del.quantity cm3/: 1.6...2.2
               100 s: (1.3...2.5)
               cm3 : 0.8
Spread
               100 s: (1.2)
(B) Setting of injection pump
     with governor
GUIDE SLEEVE TRAVEL
               rpm : 350
1st speed
                     : 1.30...1.80
  travel mm
               rpm : 600
2nd speed
                     : 3.30...3.80
  travel mm
                    : 960
3rd speed
               rpm
                   : 5.30...5.80
: 1206
   travel mm
4th speed
               rpm
  travel mm
                     : 7.90...8.40
                    : 1291
5th speed
               rpm
                     : 9.80...10.30
   travel mm
GUIDE SLEEVE POSITION
Control-lever position
              Degree: -1
               rpm : 1275
Speed
Rack travel in mm : 15.20...17.80
```

BEGINNING OF DELIVERY

Outside diameter

x Wall thickness

per values

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

x Length mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed Aneroid pressure h: 1800

Anerous F. Del.quantity 1000 : 312.0...314.0 : (309.0...317.0)

cm3 : 6.00 1000 : (10.00) Spread

RATED SPEED

1st version Control lever

position degrees: 113...121

Testina:

1st rack travel in: 13.30

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

Speed : 1270...1300 rom

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 62...70

Testing:

Speed : 250 rpm Minimum rack trave: 7.00 : 350 rpm

Rack travel in mm : 5.00...5.60

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude Compensator Test

1st version

Setting

Speed ngn : 500 hPa : -Pressure

: 7.80...8.10 Rack travel mm

Measurement

Speed $1/\min : 500$

1st pressure hPa : 300

Rack travel in m: 9.40...9.50

2nd pressure hPa : 1100

Rack travel in m: 13.60...13.80

START CUT-OUT

1/min : 310 (330) Speed

FUEL DELIVERY CHARACTERISTICS

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1st version

Anaroid pressure h: 1800

Speed : 750 rpm

Del.quantity cm3/: 303.0...313.0 1000 s: (300.0...316.0)

: 10.00 Spread cm3

1000 s: (15.0)

Aneroid pressure h: 1800 : 1150 Speed rpm

Del.quantity cm3/: 240.0...243.0 *

1000 s: (237.0...246.0)

: 10.00 Spread cm3

1000 s: (15.0)

Aneroid pressure h: -: 500 Speed COM

Del.quantity cm3/: 124.0...126.0

1000 s: (121.0...129.0)

cm3 : 10.00 Spread

1000 s: (15.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 330.0...350.0

1000 s: (326.0...354.0)

Remarks:

* = Set at reduced-delivery stop.

Note remarks

: MB 22,0 c : 27.03.92 Test sheet Edition : 10.90 Replaces Test oil : ISO-4113

: 0 402 640 817 Combination no.

Injection pump

Pump designation : PE12P12OA52OLS7826 : 0 412 620 817 EP type number

Governor

Governor design. : RQV350...1150PA870-4

: 0 421 813 717 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: OM 444 LA Engine

: 736.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test Lines

Outside diameter

x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55)

Rack travel in mm: 19.00...21.00 Firing order: 12-1-5-9-8-3-4-11-10-2-6-7

Phasing

: 0-45-60-105-120-165-180-225-240-285-300-

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 12

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 15.20...15.30

Del.guantity cm3/: 31.2...31.4

100 s: (30.9...31.7)

cm3 : 0.6Spread

100 s: (1.0)

rpm : 350.0 2nd speed Rack travel in mm : 5.3...5.9

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.30...1.80 travel mm

rpm : 600 2nd speed

: 3.30...3.80 travel mm rpm : 960 3rd speed

5.30...5.80 1206 travel mm

4th speed rom:

7.90...8.40 travel mm

: 1291 5th speed rom

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1275

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP 1st version Sneed rpm : 1150 Aneroid pressure h: 1800 Del.quantity : 312.0...317.0) : 6.00 Spread 1000 : (10.00) RATED SPEED 1st version Control lever position degrees: 113...121 Testing: 1st rack travel in: 14.20 rpm : 1190...1200 Speed 2nd rack travel in: 4.00 Speed rpm : 1270...1300 4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 62...70 Testing: Speed : 250 mon. Minimum rack trave: 7.30 : 350 rpm Rack travel in mm : 5.30...5.90 CONSTANT REGULATION rpm : 350...600 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : -Pressure : 8.20...8.50 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 300 Rack travel in m: 9.80...9.90 2nd pressure hPa : 1100 Rack travel in m: 14.00...14.20 START CUT-OUT 1/min: 310 (330)

1st version Aneroid pressure h: 1800 : 750 Speed rpm Del.quantity cm3/: 303.0...313.0 1000 s: (300.0...316.0) cm3 : 10.00Spread 1000 s: (15.0) Aneroid pressure h: 1800 1150 Speed rpm Del.quantity cm3/: 240.0...243.0 * 1000 s: (237.0...246.0) cm3 : 10.00Spread 1000 s: (15.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 124.0...126.0 1000 s: (121.0...129.0) cm3 : 10.00 Spread 1000 s: (15.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.20 rpm : 1190...1200 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 330.0...350.0 1000 s: (326.0...354.0) Remarks: * = Set at reduced-delivery stop.

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Speed

FUEL DELIVERY CHARACTERISTICS